# MZ-R90/R91

# SERVICE MANUAL

**Ver 1.1 2000. 02**

Photo: MZ-R91 (Blue type)

*US Model*
*Canadian Model*
*Australian Model*
*Chinese Model*
*MZ-R90*

*AEP Model*
*UK Model*
*E Model*
*Tourist Model*
*MZ-R90/R91*

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| | |
|---|---|
| Model Name Using Similar Mechanism | NEW |
| Mechanism Type | MT-MZR90-165 |
| Optical Pick-up Name | LCX-2R |

## SPECIFICATIONS

**System**

**Audio playing system**
MiniDisc digital audio system

**Laser diode properties**
Material: GaAlAs
Wavelength: λ = 790 nm
Emission duration: continuous
Laser output: less than 44.6 μW
(This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block with 7 mm aperture.)

**Recording and playback time**
Maximum 80 minutes (MDW-80, stereo recording)
Maximum 160 minutes (MDW-80, monaural recording)
Maximum 74 minutes (MDW-74, stereo recording)
Maximum 148 minutes (MDW-74, monaural recording)

**Revolutions**
400 rpm to 1,800 rpm (CLV)

**Error correction**
Advanced Cross Interleave Reed Solomon Code (ACIRC)

**Sampling frequency**
44.1 kHz

**Sampling rate converter**
Input: 32 kHz/44.1 kHz/48 kHz

**Coding**
Adaptive TRansform Acoustic Coding (ATRAC)

**Modulation system**
EFM (Eight to Fourteen Modulation)

**Number of channels**
2 stereo channels
1 monaural channel

**Frequency response**
20 to 20,000 Hz ± 3 dB

**Wow and Flutter**
Below measurable limit

**Inputs**
Microphone: stereo mini-jack, 0.35–1.38 mV
Line in: stereo mini-jack, 69–194 mV
Optical (Digital) in: optical (digital) mini-jack

**Outputs**
🎧/LINE OUT*: stereo mini-jack
Headphones: maximum output level 5 mV + 5 mV, load impedance 16 ohm
LINE OUT: 194 mV, load impedance 10 kilohm
* The 🎧/LINE OUT jack connects either headphones or a line cable.

**General**

**Power requirements**
Sony AC Power Adaptor (supplied) connected at the DC IN 3 V jack:
220–230 V AC, 50/60 Hz (European model)
120 V AC, 50 Hz (Canadian model)
100–240 V AC, 50/60 Hz (Other models)
Nickel metal hydride rechargeable battery NH-14WM (supplied)
LR6 (size AA) alkaline battery (not supplied)

**Battery operation time**
**Battery life[1)]**

| Batteries | Recording [2)] | Playback |
|---|---|---|
| NH-14WM nickel metal hydride rechargeable battery | Approx. 6.5 hours | Approx. 12 hours |
| LR6 (SG) (size AA) Sony alkaline dry battery | Approx. 4 hours | Approx. 16.5 hours |
| NH-14WM nickel metal hydride rechargeable battery + One LR6 (SG) (size AA) | Approx. 14.5 hours | Approx. 29 hour |

[1)] The battery life may be shorter due to operating conditions and the temperature of the location.
[2)] When you record, use a fully charged rechargeable battery.

**Dimensions**
MZ-R90
Approx. 78.9 × 17.3 × 72.0 mm (w/h/d)
($3^1/_8 \times {}^{11}/_{16} \times 2^7/_8$ in.)
MZ-R91
Approx. 78.9 × 18.0 × 72.0 mm (w/h/d)
($3^1/_8 \times {}^{23}/_{32} \times 2^7/_8$ in.)

**Mass**
MZ-R90
Approx. 105 g (3.7 oz) the recorder only
Approx. 148 g (5.2 oz) incl. a recordable MD, and NH-14WM nickel metal hydride rechargeable battery
MZ-R91
Approx. 110 g (3.8 oz) the recorder only
Approx. 153 g (5.4 oz) incl. a recordable MD, and NH-14WM nickel metal hydride rechargeable battery

**Supplied accessories**
AC power adaptor (1)
Headphones with a remote control (1) (RM-MZ2S)
NH-14WM nickel metal hydride rechargeable battery (1)
Dry battery case (1)
Rechargeable battery carrying case (1)
Carrying pouch (1)
AC plug adaptor (1)

Design and specifications are subject to change without notice.

## PORTABLE MINIDISC RECORDER

SONY®

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**Flexible Circuit Board Repairing**

- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

**Notes on chip component replacement**

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

**ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!**

**LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.**

# SECTION 1
# SERVICING NOTES

**NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT**

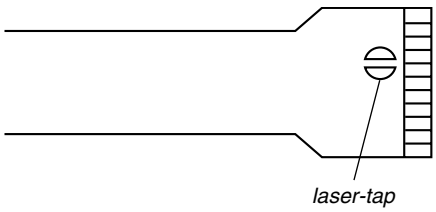
The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

**NOTES ON LASER DIODE EMISSION CHECK**

Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

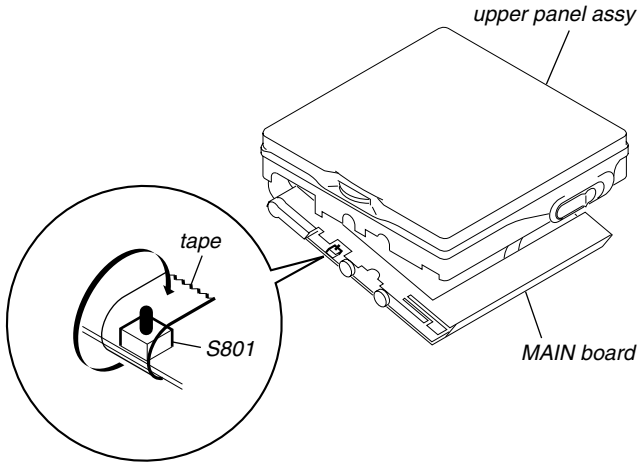
**NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (LCX-2R)**

The laser diode in the optical pick-up block may suffer electrostatic break-down easily. When handling it, perform soldering bridge to the laser-tap on the flexible board. Also perform measures against electrostatic break-down sufficiently before the operation. The flexible board is easily damaged and should be handled with care.




***OPTICAL PICK-UP FLEXIBLE BOARD***

- When repairing this device with the power on, if you remove the MAIN board or open the upper panel assy, this device stops working.
  In this case, you can work without the device stopping by fastening the hook of the open/close detect switch (S801) with tape.




- This set is designed to perform automatic adjustment for each adjustment and write its value to EEPROM. Therefore, when EEPROM (IC802) has been replaced in service, be sure to perform automatic adjustment and write resultant values to the new EEPROM.
  (Refer to Section 5 Electrical Adjustment. (page 18))

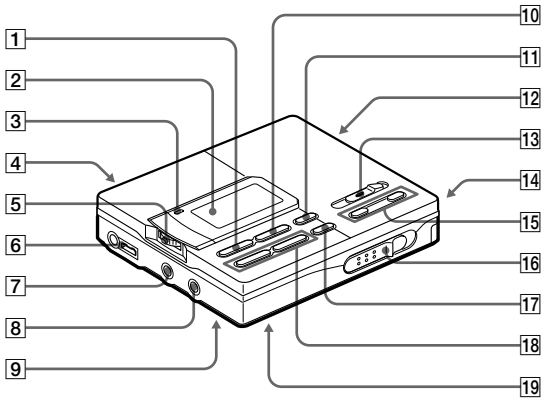
- Replacement of CXD2660GA (IC502) and CXR701080-013GA (IC801) used in this set requires a special tool. Therefore, they cannot be replaced.

# SECTION 2
# GENERAL

This section is extracted from instruction manual.

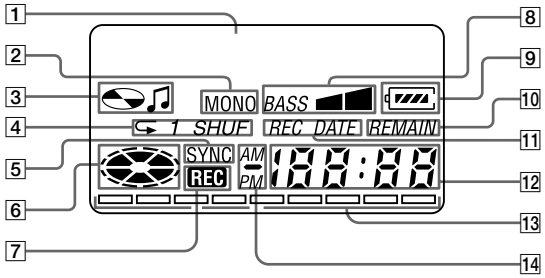
## • LOCATION OF CONTROLS

### – The recorder –



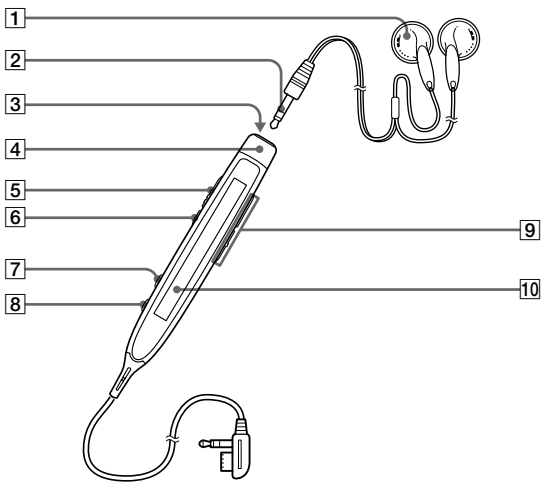
1 ■ (stop) /CHARGE button
2 Display window
3 REC indicator
4 DC IN 3V jack
5 Jog lever
6 🎧/LINE OUT (headphones/line out) jack
7 MIC (PLUG IN POWER) jack
8 LINE IN (OPTICAL) jack
9 HOLD switch
Slide to lock the controls of the recorder.
10 ► (play) button
11 ❚❚ (pause) button
12 T MARK (track mark) button
13 REC (record) switch
14 Battery compartment
15 VOL (volume) +/– buttons
16 OPEN switch
17 END SEARCH button
18 ⏮/⏭ (search/AMS) buttons
19 SYNCHRO REC (synchro-recording) ON/OFF switch

### – The display window of the recorder –




1 Character information display
Displays the disc and track name*, date, error messages, track numbers, etc.
* Disc and track names appear only with MDs that have been electronically labeled.
2 MONO(monaural) indication
3 Disc name/track name indications
Appears when labeling disc or track respectively.
4 Play mode indication
Shows the play mode of the MD.
(all repeat): All tracks play repeatedly.
1(single repeat): One track plays repeatedly.
SHUF(shuffle repeat): Tracks will be repeated in random order.
5 SYNC (synchro-recording) indication
Lights up while synchro-recording.
6 Disc indication
Shows that the disc is rotating for recording, playing or editing an MD.
7 REC indication
Lights up while recording. Flashes when standing by for recording.
8 Mega bass indication
9 Battery indication
Shows approximate battery condition. While charging the rechargeable battery, this indication shows the charging condition.
10 REMAIN (remaining time/tracks) indication
Lights up along with the remaining time of the track, remaining time of the MD, or remaining number of tracks.
11 REC DATE (recorded/current date) indication
Lights up along with the date and time the MD was recorded. When only "DATE" lights up, the current date and time are displayed.
12 Time display
Shows the elapsed time of the track being recorded or played.
13 Level meter
Shows the level of the MD being played or recorded.
14 AM/PM indication
Lights up along with the time indication in the 12-hour system.

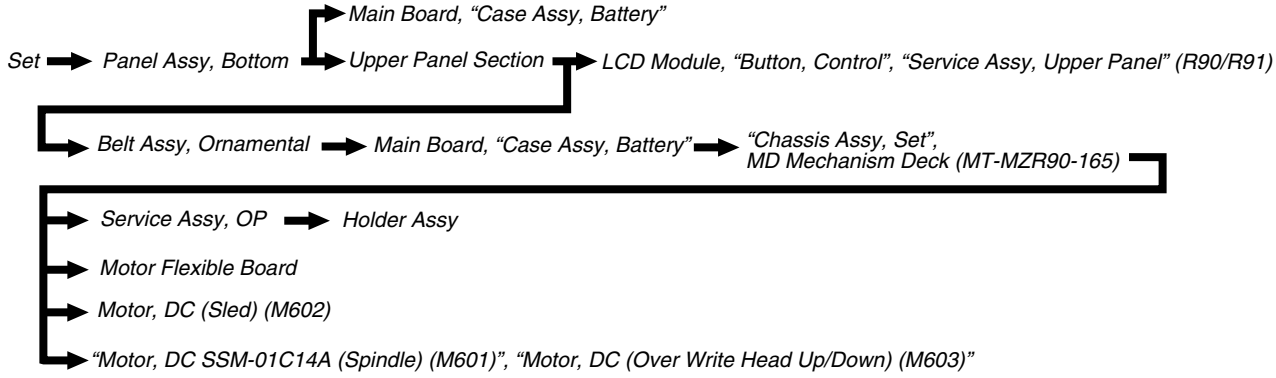
### – The headphones with a remote control (RM-MZ2S) –



1 Headphones
Can be replaced with optional headphones.
2 Stereo mini plug
3 ■ (stop) button
4 Control
To play, press the control towards ►·⏭ during stop. Press the control towards ►·⏭ during play to search the beginning of the succeeding track; hold in this position to fast-forward. Press towards ⏮ during play to search the beginning of the preceeding track; hold in this position to rewind.
5 HOLD switch
Slide to lock the controls of the remote control.
6 ❚❚ (pause) button
7 PLAY MODE button
8 DISPLAY button
9 VOL (volume) +/– buttons
When the AVLS is set to on, you cannot increase the volume to the maximum. To increase the volume above the limited level, set the AVLS to off using the jog lever.
10 Display window

# SECTION 3
# DISASSEMBLY

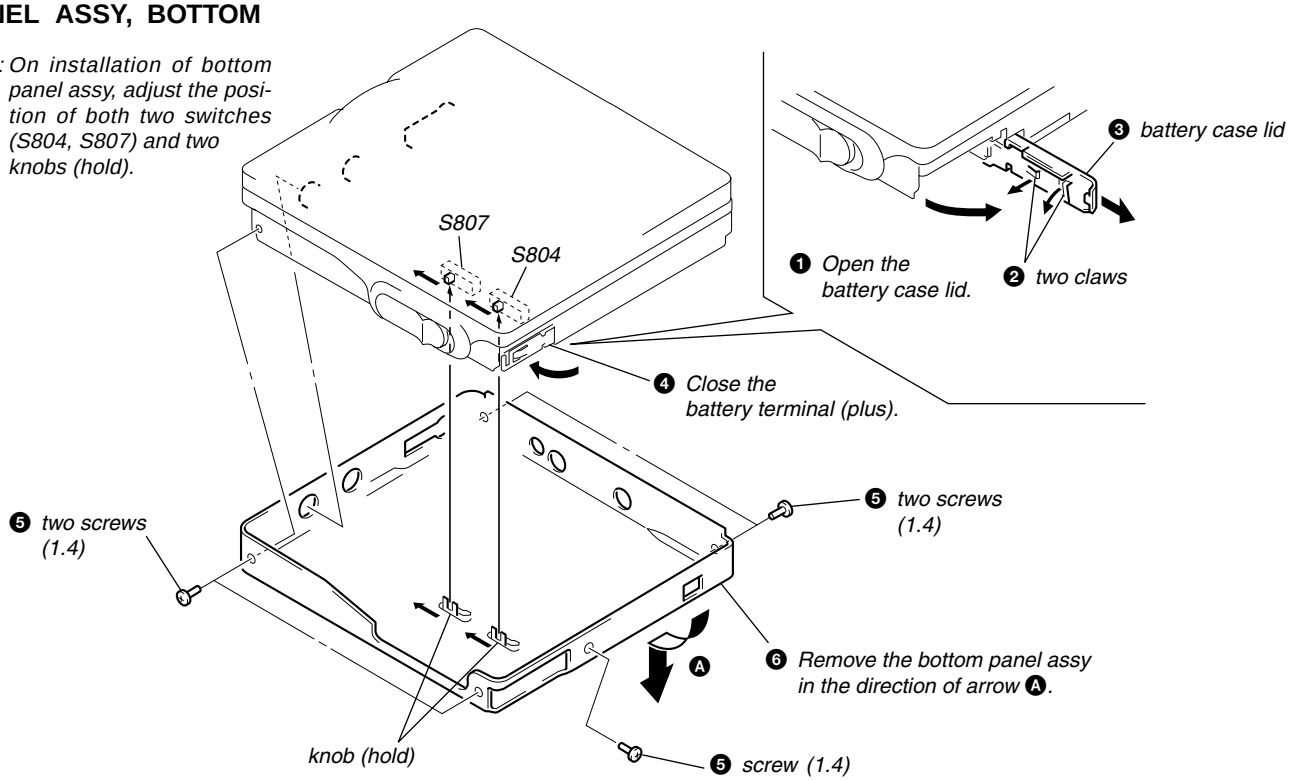
• This set can be disassembled in the order shown below.


Set
Panel Assy, Bottom
Main Board, "Case Assy, Battery"
Upper Panel Section
LCD Module, "Button, Control", "Service Assy, Upper Panel" (R90/R91)
Belt Assy, Ornamental
Main Board, "Case Assy, Battery"
"Chassis Assy, Set",
MD Mechanism Deck (MT-MZR90-165)
Service Assy, OP
Holder Assy
Motor Flexible Board
Motor, DC (Sled) (M602)
"Motor, DC SSM-01C14A (Spindle) (M601)", "Motor, DC (Over Write Head Up/Down) (M603)"

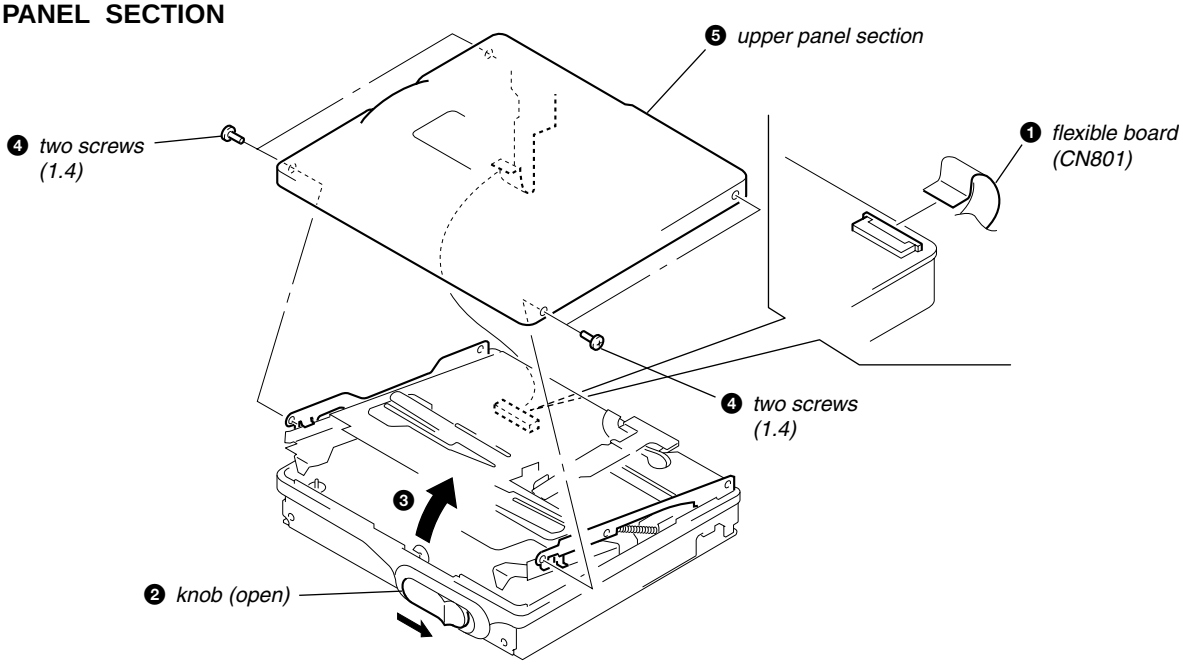
**Note:** Follow the disassembly procedure in the numerical order given.

## PANEL ASSY, BOTTOM

*Note: On installation of bottom panel assy, adjust the position of both two switches (S804, S807) and two knobs (hold).*

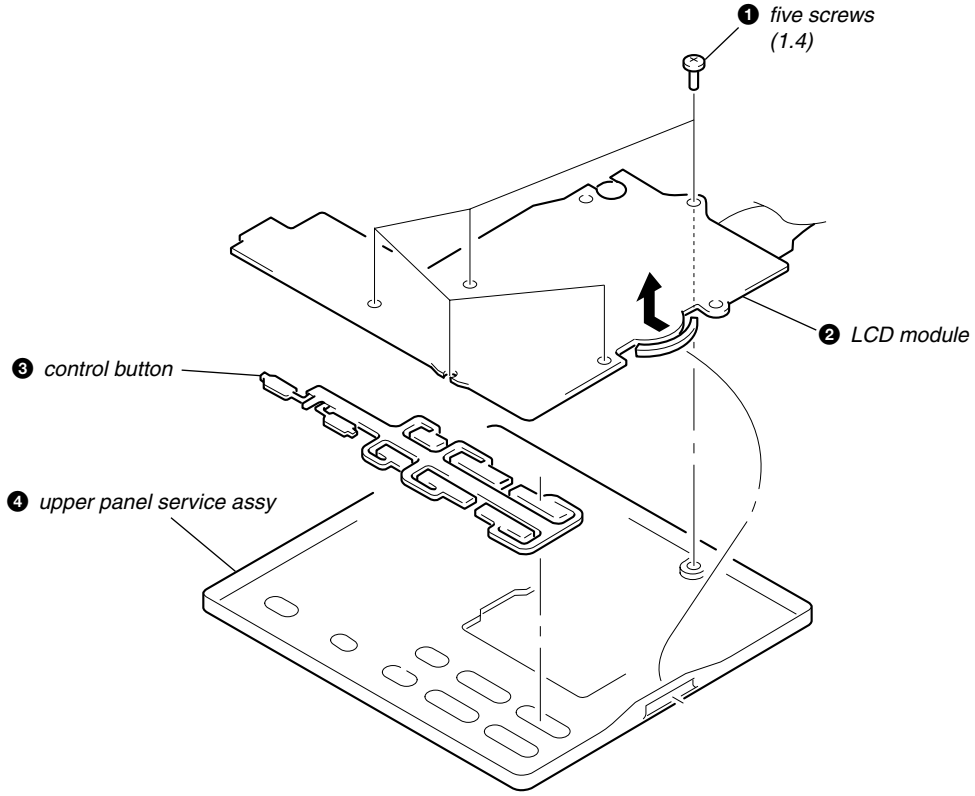



## UPPER PANEL SECTION

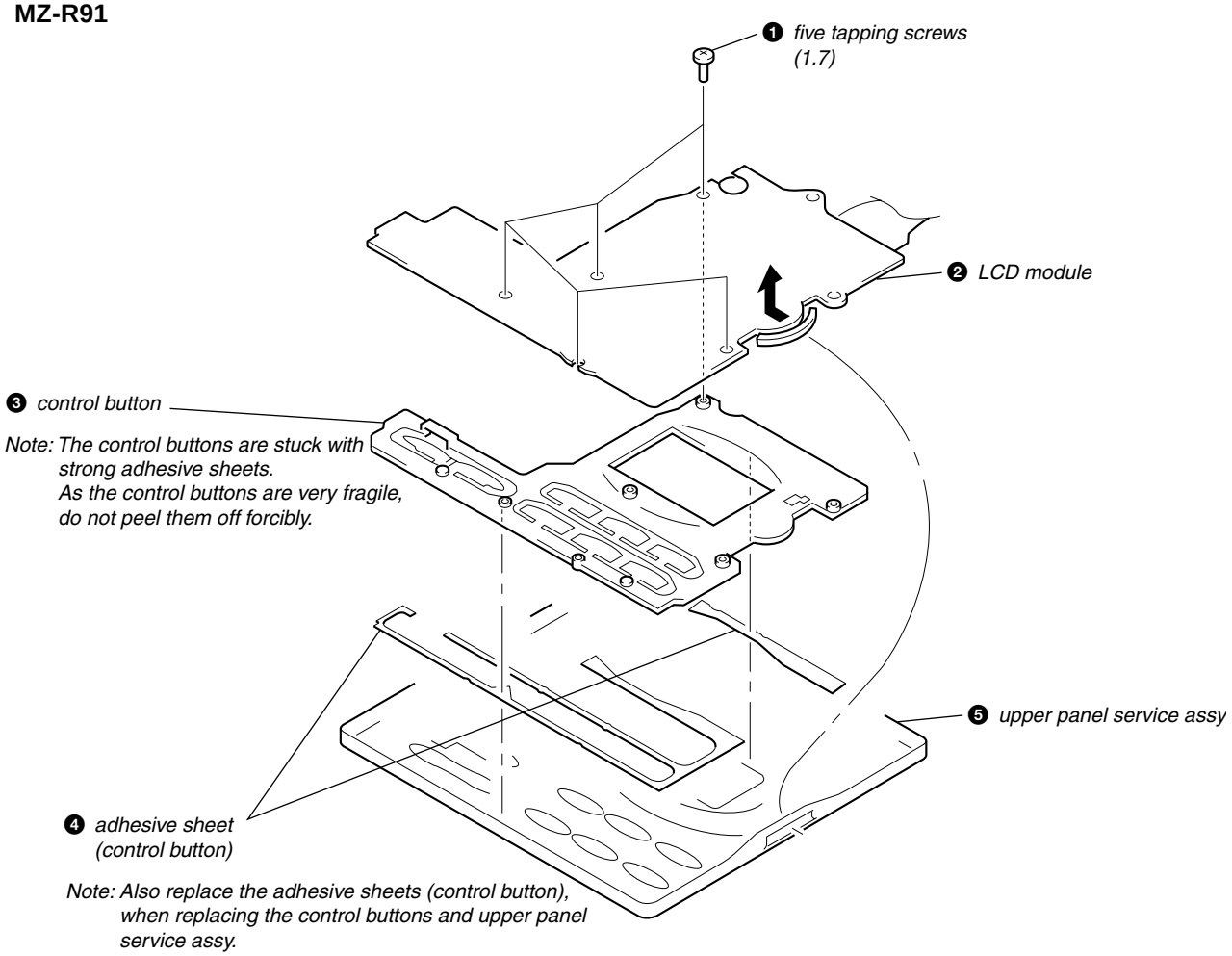


**LCD MODULE, "BUTTON, CONTROL", "SERVICE ASSY, UPPER PANEL"**

- **MZ-R90**

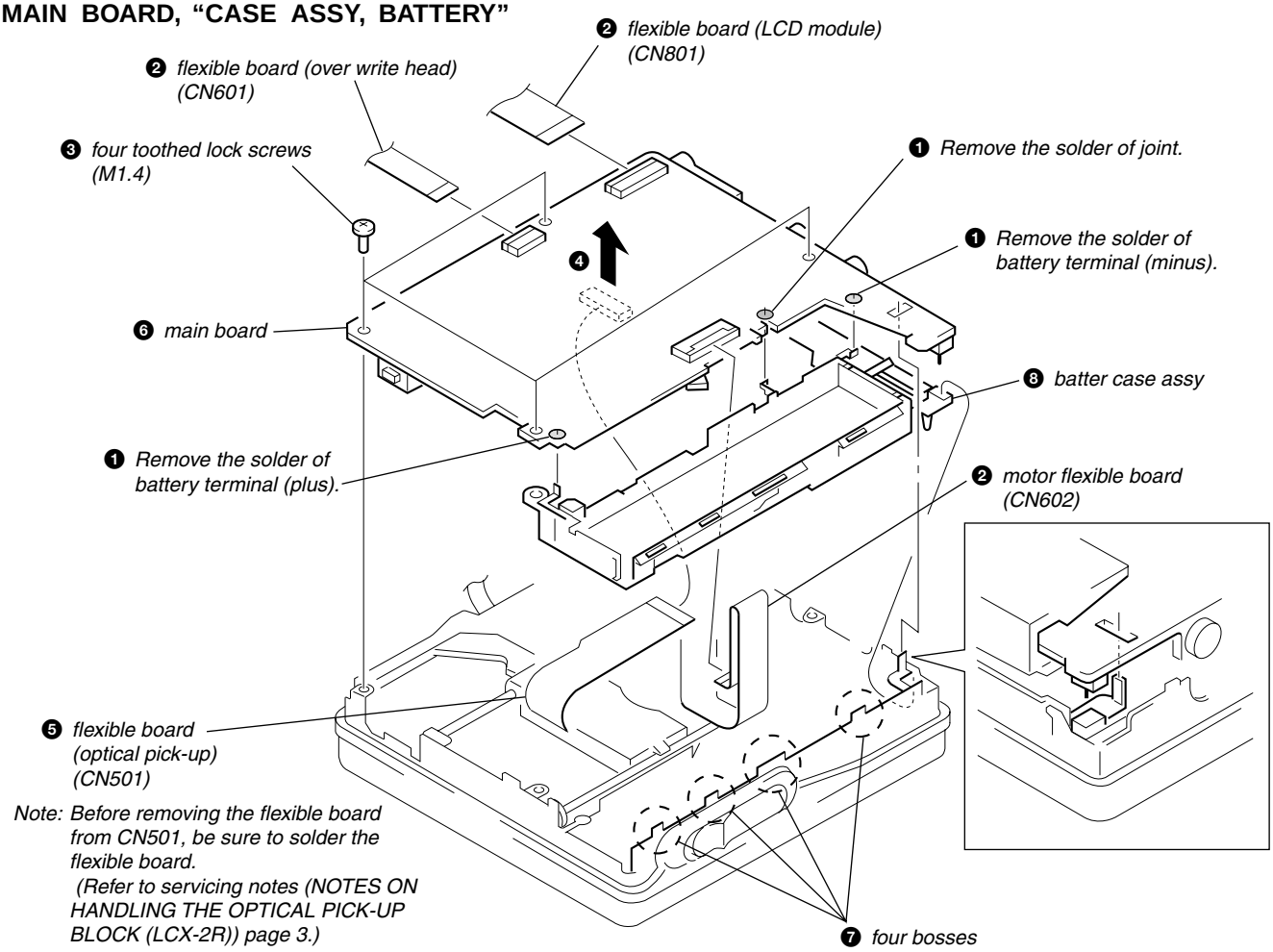



- **MZ-R91**


❶ five tapping screws
(1.7)
❷ LCD module
❸ control button
Note: The control buttons are stuck with strong adhesive sheets.
As the control buttons are very fragile, do not peel them off forcibly.
❺ upper panel service assy
❹ adhesive sheet
(control button)

*Note: Also replace the adhesive sheets (control button), when replacing the control buttons and upper panel service assy.*

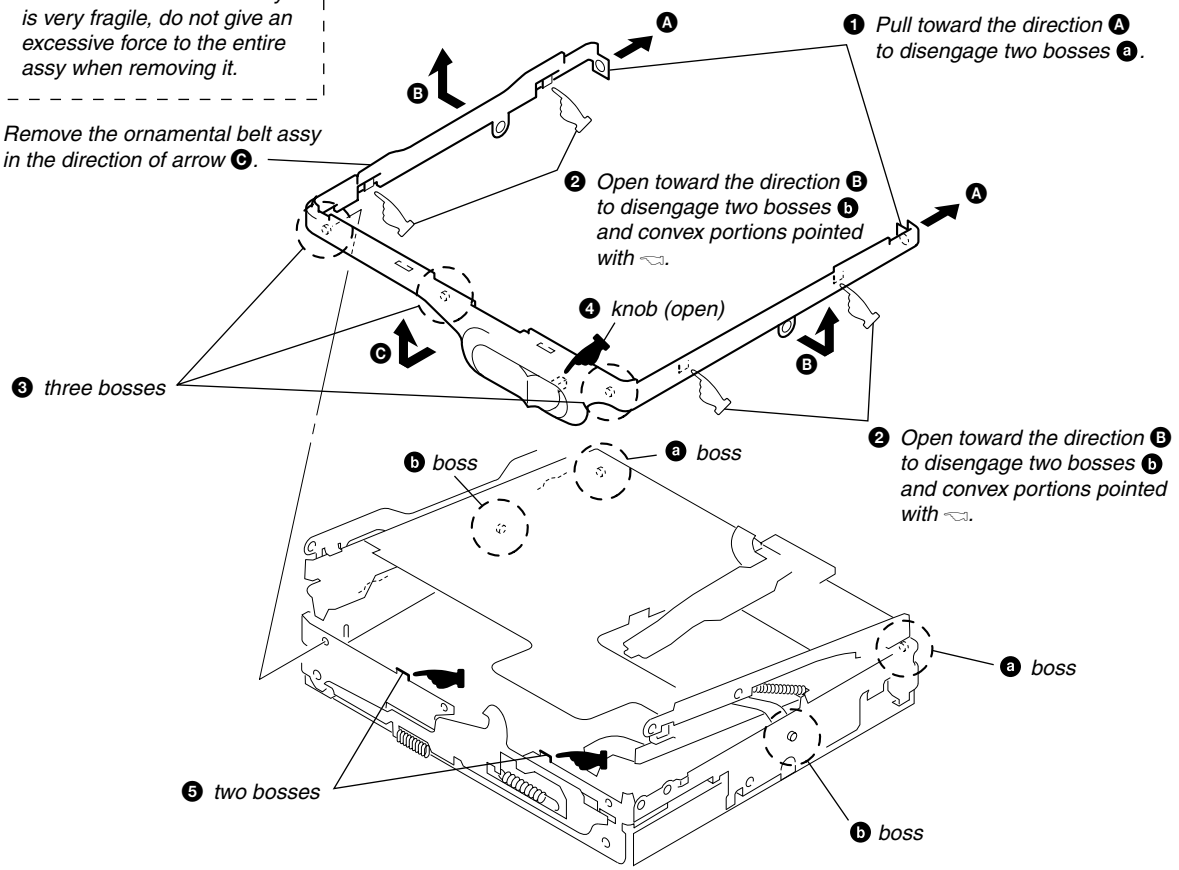
## MAIN BOARD, "CASE ASSY, BATTERY"


❷ flexible board (LCD module) (CN801)
❷ flexible board (over write head) (CN601)
❸ four toothed lock screws (M1.4)
❶ Remove the solder of joint.
❶ Remove the solder of battery terminal (minus).
❹
❻ main board
❽ batter case assy
❶ Remove the solder of battery terminal (plus).
❷ motor flexible board (CN602)
❺ flexible board (optical pick-up) (CN501)
❼ four bosses

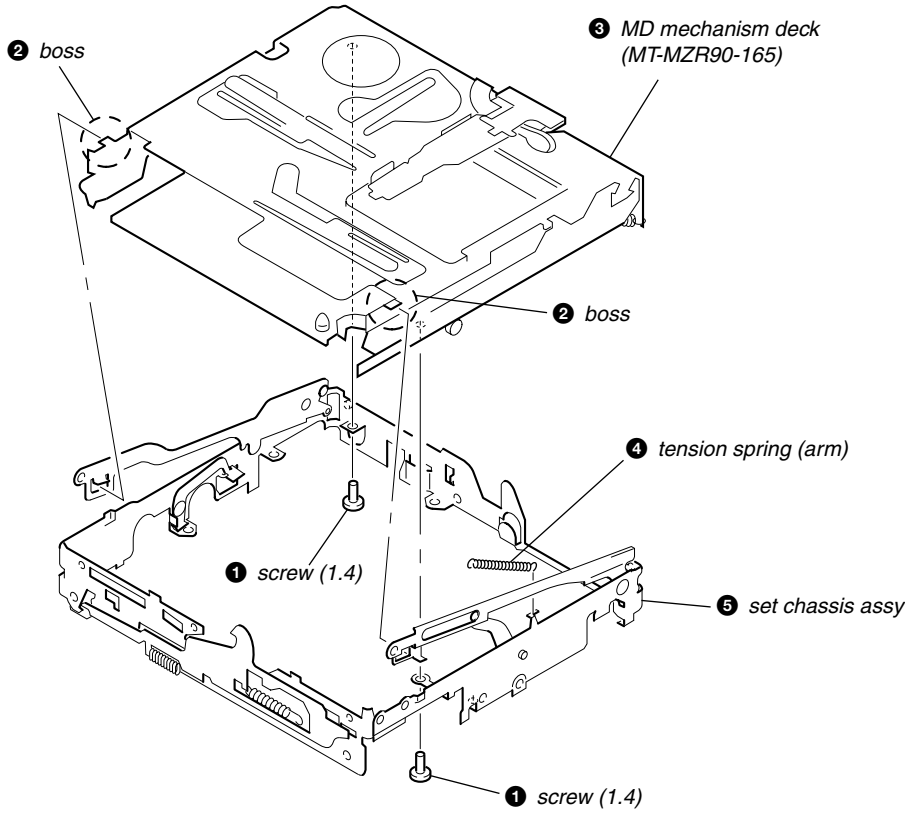
Note: Before removing the flexible board from CN501, be sure to solder the flexible board.
(Refer to servicing notes (NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK (LCX-2R)) page 3.)

## BELT ASSY, ORNAMENTAL

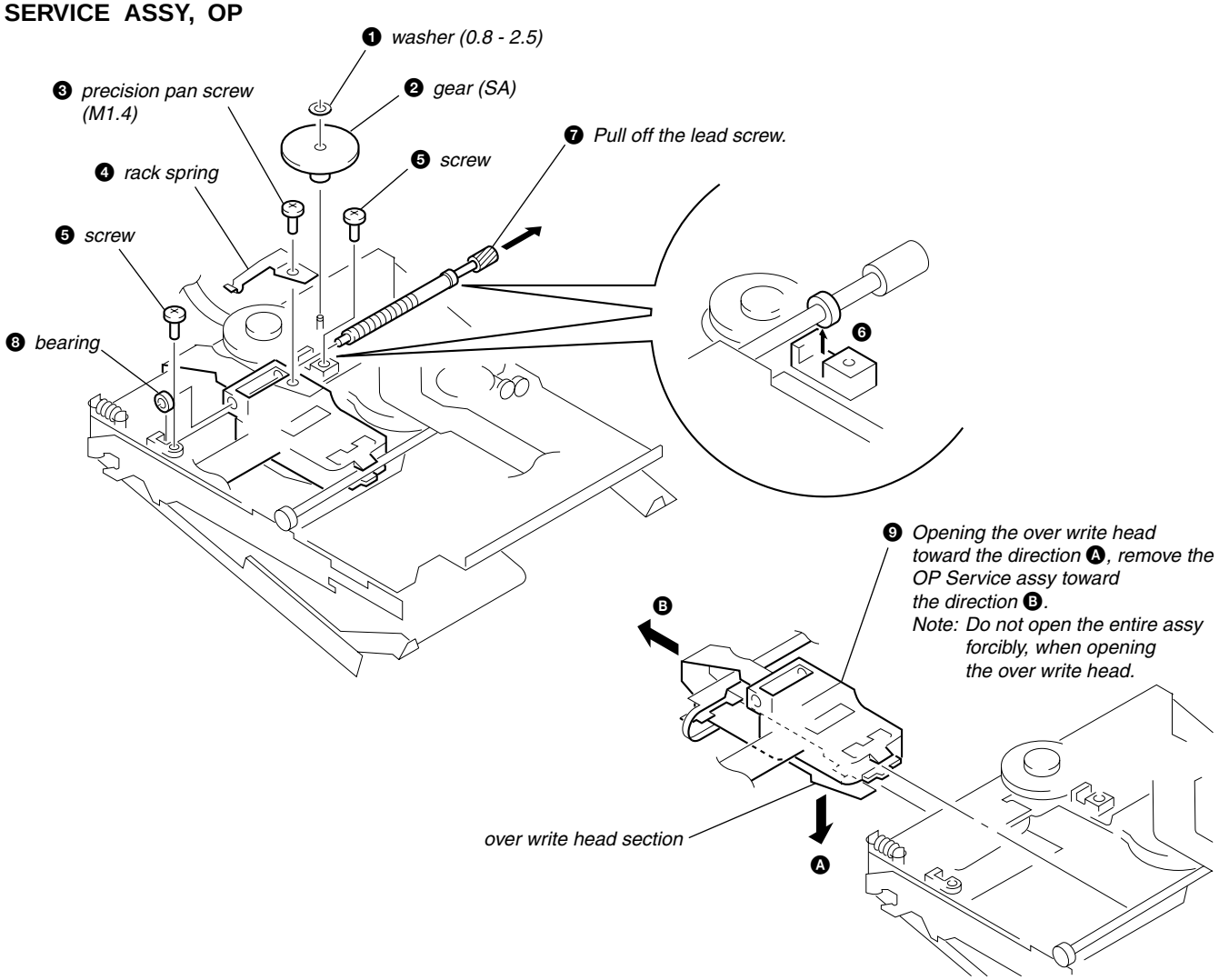
Note: As the ornamental belt assy is very fragile, do not give an excessive force to the entire assy when removing it.


Ⓐ
Ⓑ
❶ Pull toward the direction Ⓐ to disengage two bosses ⓐ.
❻ Remove the ornamental belt assy in the direction of arrow Ⓒ.
❷ Open toward the direction Ⓑ to disengage two bosses ⓑ and convex portions pointed with ☜.
❹ knob (open)
Ⓒ
❸ three bosses
ⓑ boss
ⓐ boss
❷ Open toward the direction Ⓑ to disengage two bosses ⓑ and convex portions pointed with ☜.
ⓐ boss
❺ two bosses
ⓑ boss

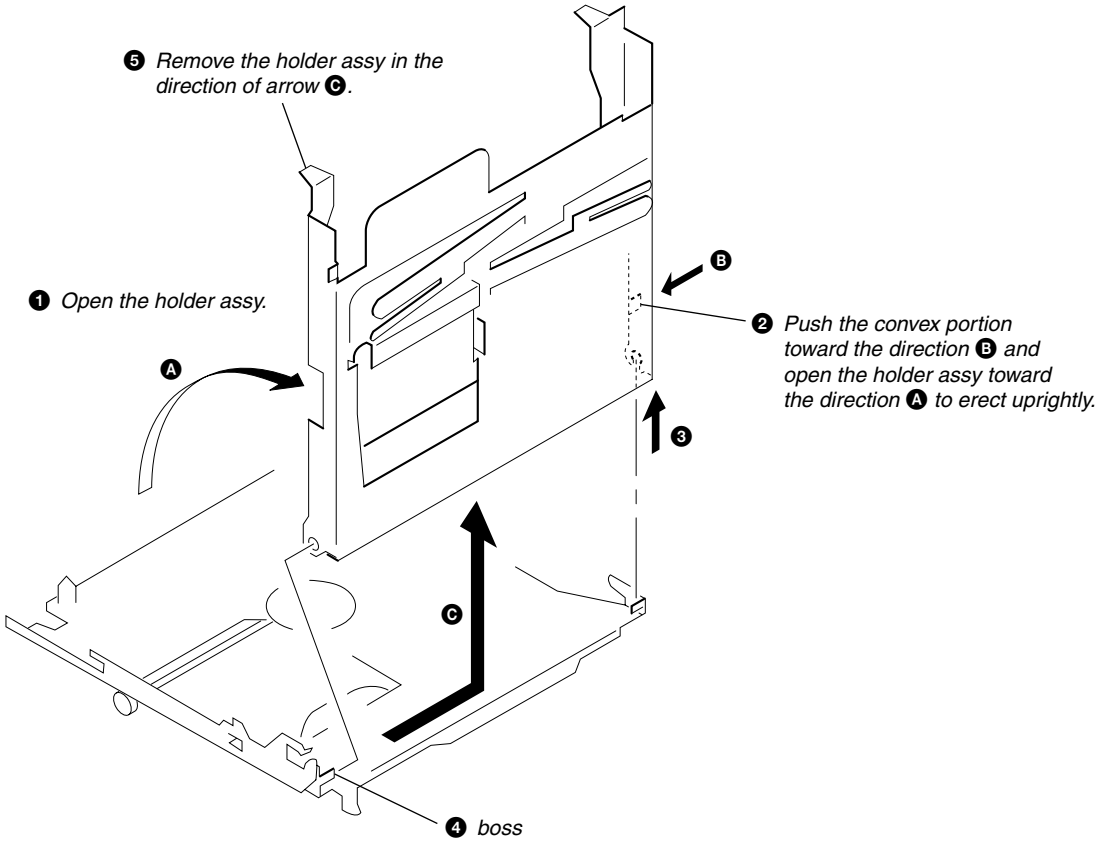
**“CHASSIS ASSY, SET”, MD MECHANISM DECK (MT-MZR90-165)**



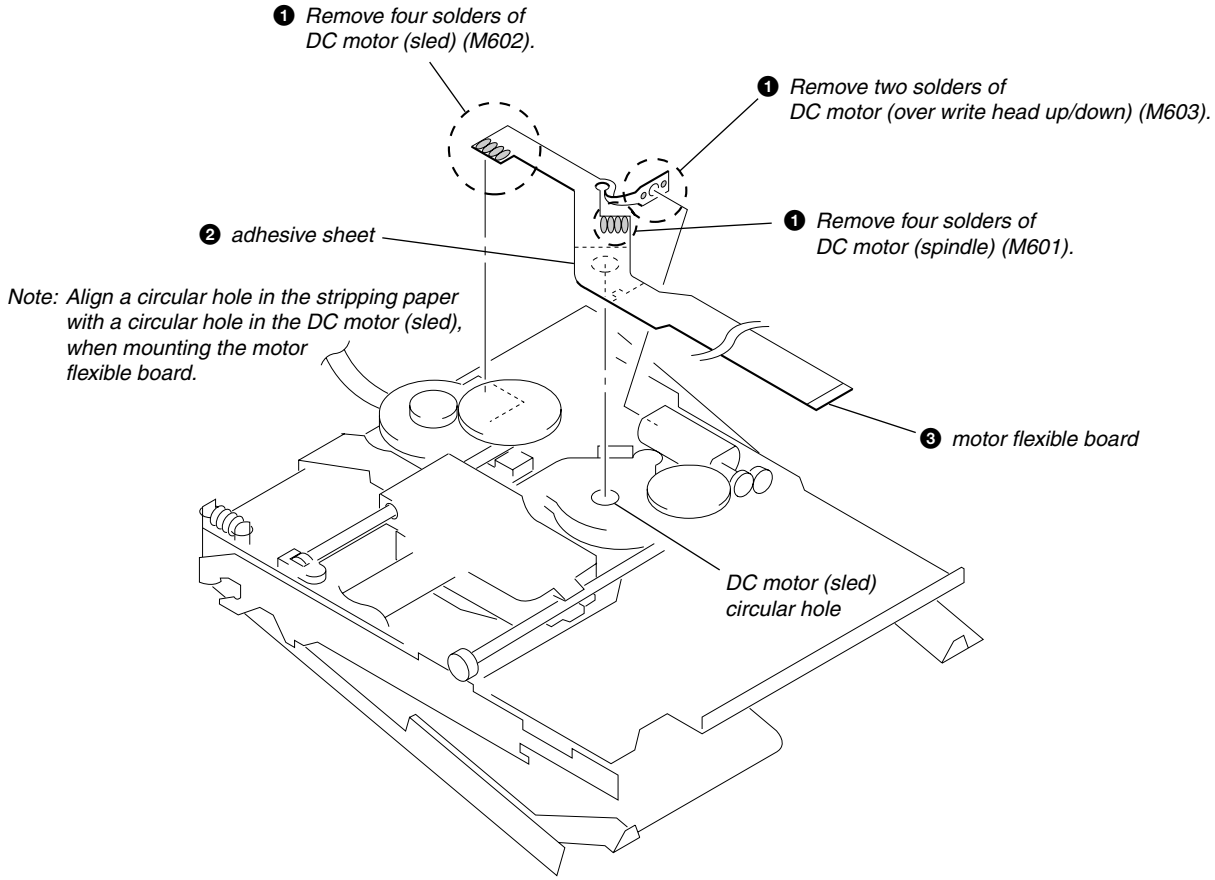

**SERVICE ASSY, OP**


❶ washer (0.8 - 2.5)
❸ precision pan screw (M1.4)
❷ gear (SA)
❼ Pull off the lead screw.
❹ rack spring
❺ screw
❺ screw
❽ bearing
❻
❾ Opening the over write head toward the direction Ⓐ, remove the OP Service assy toward the direction Ⓑ.
Note: Do not open the entire assy forcibly, when opening the over write head.
Ⓑ
over write head section
Ⓐ

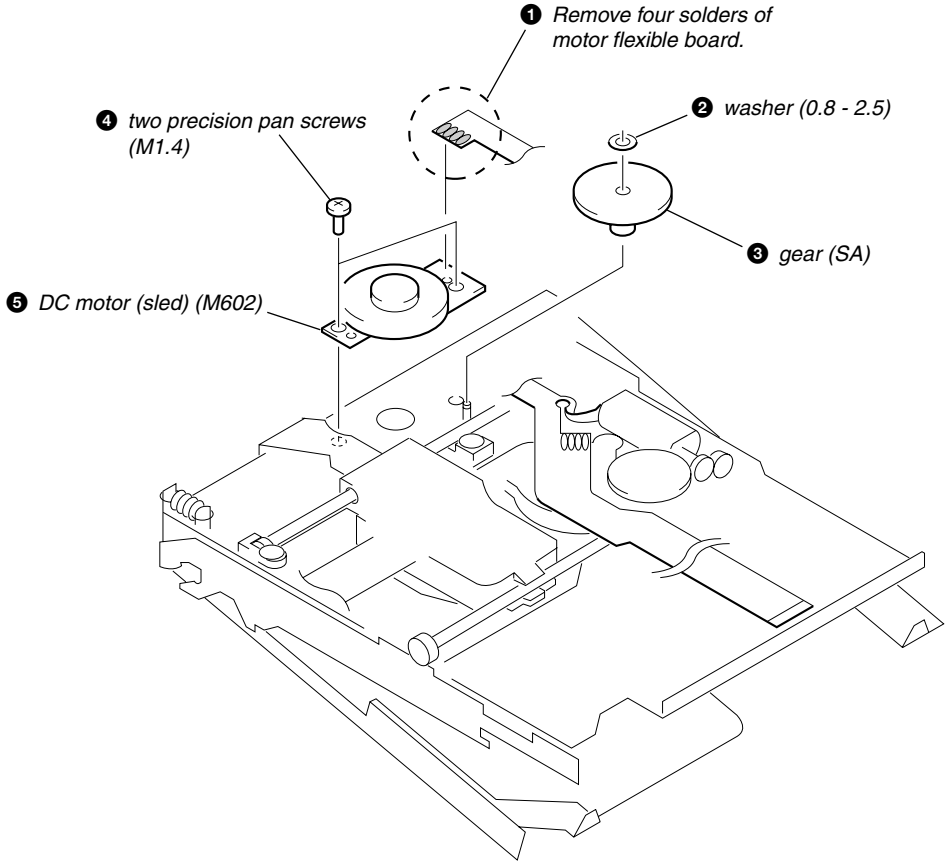
## HOLDER ASSY


❺ Remove the holder assy in the direction of arrow Ⓒ.
❶ Open the holder assy.
Ⓐ
Ⓑ
❷ Push the convex portion toward the direction Ⓑ and open the holder assy toward the direction Ⓐ to erect uprightly.
❸
Ⓒ
❹ boss

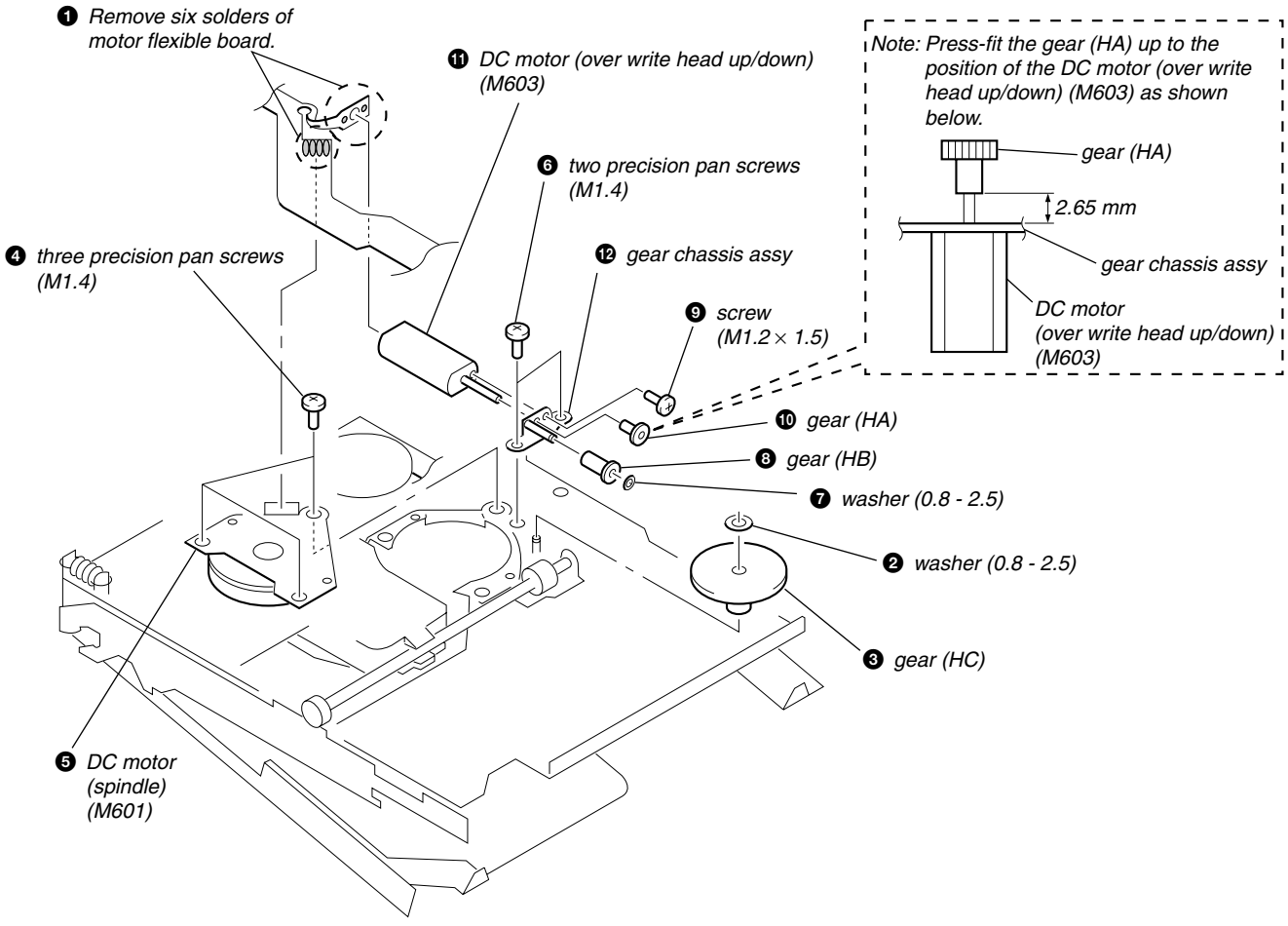
## MOTOR FLEXIBLE BOARD


❶ Remove four solders of DC motor (sled) (M602).
❶ Remove two solders of DC motor (over write head up/down) (M603).
❶ Remove four solders of DC motor (spindle) (M601).
❷ adhesive sheet
Note: Align a circular hole in the stripping paper with a circular hole in the DC motor (sled), when mounting the motor flexible board.
❸ motor flexible board
DC motor (sled) circular hole

**MOTOR, DC (SLED) (M602)**




**"MOTOR, DC SSM-01C14A (SPINDLE) (M601)",**
**"MOTOR, DC (OVER WRITE HEAD UP/DOWN) (M603)"**


❶ Remove six solders of motor flexible board.
⓫ DC motor (over write head up/down) (M603)
❻ two precision pan screws (M1.4)
❹ three precision pan screws (M1.4)
⓬ gear chassis assy
❾ screw (M1.2 × 1.5)
❿ gear (HA)
❽ gear (HB)
❼ washer (0.8 - 2.5)
❷ washer (0.8 - 2.5)
❸ gear (HC)
❺ DC motor (spindle) (M601)
Note: Press-fit the gear (HA) up to the position of the DC motor (over write head up/down) (M603) as shown below.
gear (HA)
2.65 mm
gear chassis assy
DC motor (over write head up/down) (M603)

# SECTION 4
# TEST MODE

## [Outline]

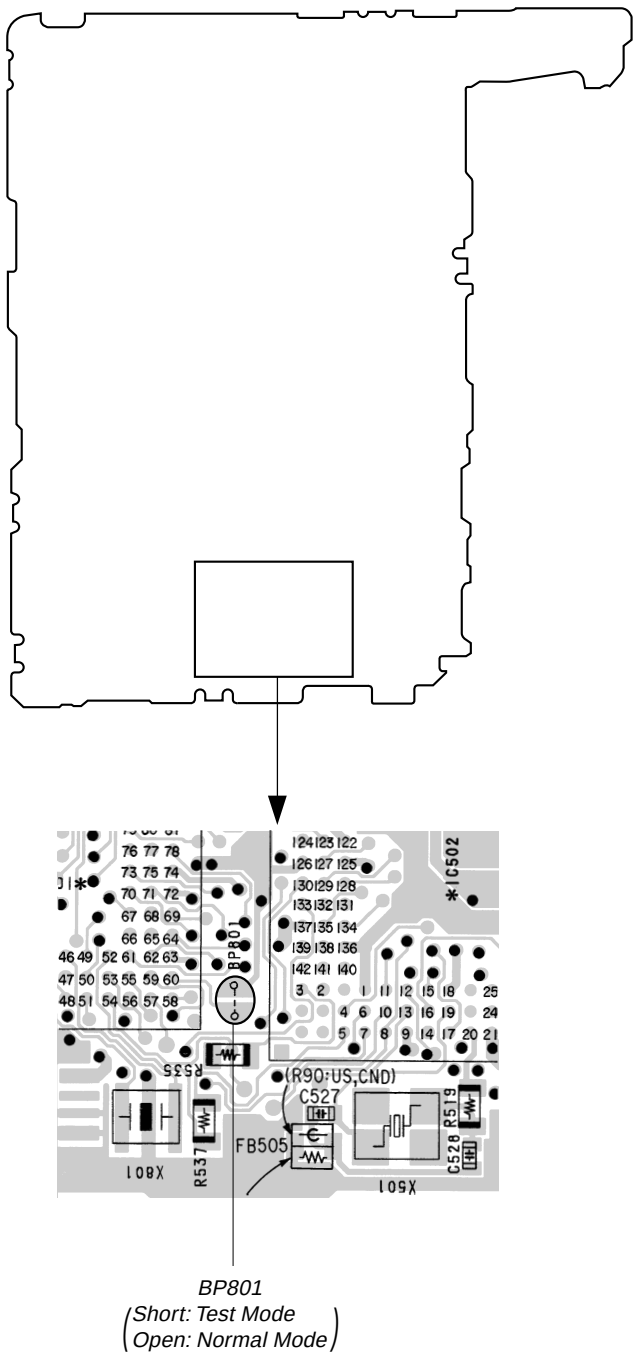
- This set provides the Overall adjustment mode (Assy mode) that allows CD and MO disc to be automatically adjusted when in the test mode. In this overall adjustment mode, the protect switch is detected to judge the disc, CD or MO, and each adjustment is automatically executed in order. If a fault is found, the system displays its location. Also, the manual mode allows each individual adjustment to be automatically adjusted.
- The keys in the description refer to the keys on both set and remote commander unless otherwise specified. Though LCD display shows the LCD of the remote commander, same contents are also displayed on the LCD of the set.

## [Setting Method of Test Mode]

There are two different methods to set the test mode:

① Short BP801 (TEST) on the MAIN board with a solder bridge (connect pin ⑥⓪ of IC801 to the ground). Then, turn on the power.

**– MAIN BOARD (Conductor Side) –**




*BP801*
*(Short: Test Mode*
*Open: Normal Mode)*

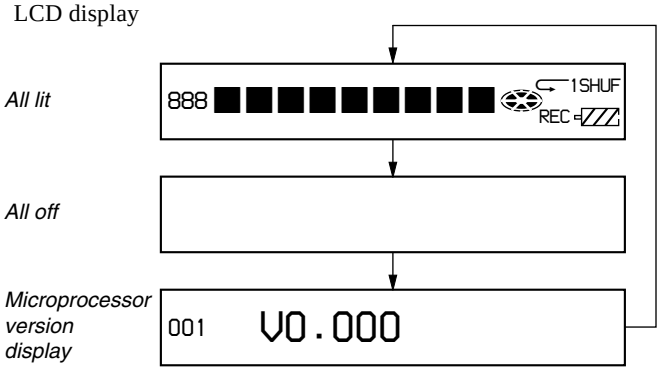
② In the normal mode, turn on the HOLD switch on the set. While pressing the ► key on the set, press the following set keys in the following order:

▶▶| → ▶▶| → |◀◀ → |◀◀ → ▶▶| → |◀◀ → ▶▶| → |◀◀ → ❚❚ → ❚❚

## [Operation in Setting the Test Mode]

- When the test mode becomes active, first the display check mode is selected. (Press ■ key once, when the display check mode is not active.)
- Other mode can be selected from the display check mode.
- When the test mode is set, the LCD repeats the following display.

LCD display




- When the ❚❚ key is pressed and hold down, the display at that time is held so that display can be checked.

## [Releasing the Test Mode]

For test mode set with the method ①:

Turn off the power and open the solder bridge on BP801 (TEST) on the MAIN board.

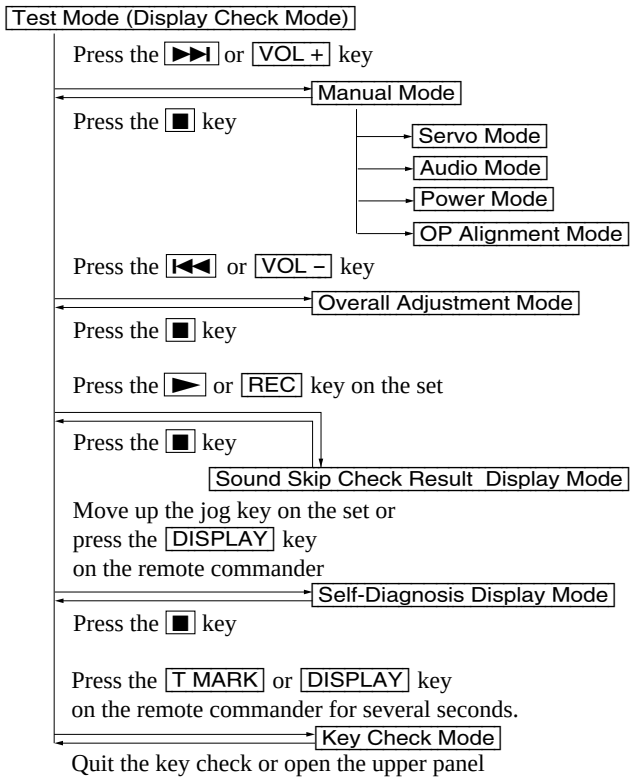
Note: Remove the solders completely. Remaining could be shorted with the chassis, etc.

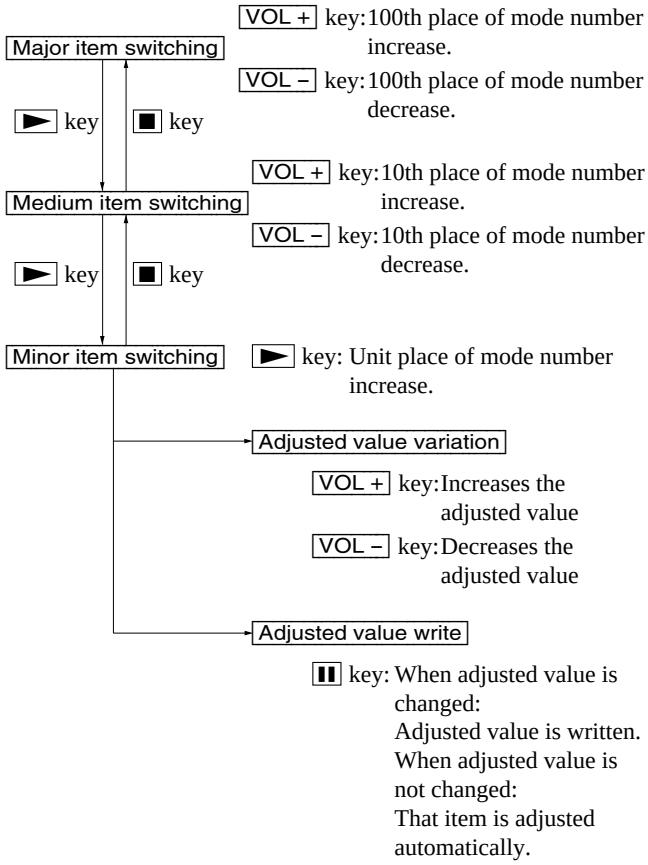
For test mode set with the method ②:

Turn off the power.

**Note:** If electrical adjustment (see page 18) has not been finished completely, always start in the test mode. (The set cannot start in normal mode.)

## [Configuration of Test Mode]


Test Mode (Display Check Mode)
Press the ▶▶I or VOL + key
Manual Mode
Press the ■ key
Servo Mode
Audio Mode
Power Mode
OP Alignment Mode
Press the I◀◀ or VOL − key
Overall Adjustment Mode
Press the ■ key
Press the ► or REC key on the set
Press the ■ key
Sound Skip Check Result Display Mode
Move up the jog key on the set or
press the DISPLAY key
on the remote commander
Self-Diagnosis Display Mode
Press the ■ key
Press the T MARK or DISPLAY key
on the remote commander for several seconds.
Key Check Mode
Quit the key check or open the upper panel


Major item switching
VOL + key: 100th place of mode number increase.
VOL − key: 100th place of mode number decrease.
► key
■ key
Medium item switching
VOL + key: 10th place of mode number increase.
VOL − key: 10th place of mode number decrease.
► key
■ key
Minor item switching
► key: Unit place of mode number increase.
Adjusted value variation
VOL + key: Increases the adjusted value
VOL − key: Decreases the adjusted value
Adjusted value write
II key: When adjusted value is changed:
Adjusted value is written.
When adjusted value is not changed:
That item is adjusted automatically.

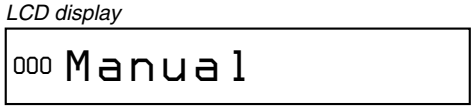
## [Manual Mode]

Mode to adjust or check the operation of the set by function.
Normally, the adjustment in this mode is not executed.

• Transition method in Manual Mode

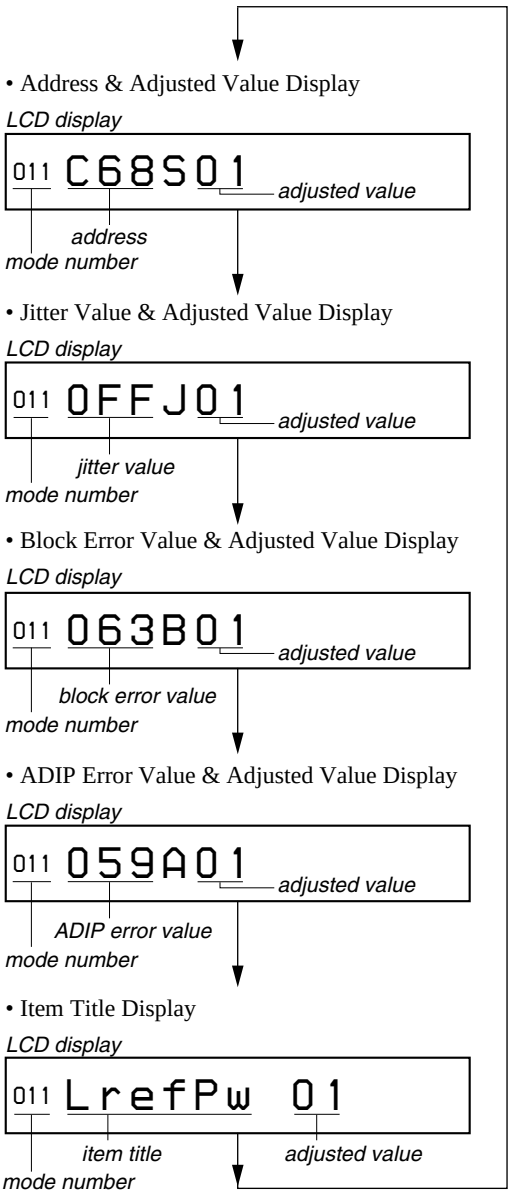
1. Setting the test mode. (See page 11)
2. Press the ▶▶I or VOL + key activates the manual mode where the LCD display as shown below.

*LCD display*

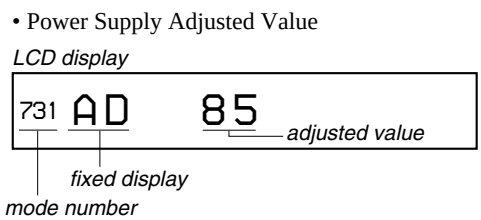



3. The optical pick-up moves outward or inward while the ▶▶I or I◀◀ key is pressed for several seconds respectively.
4. Each test item is assigned with a 3-digit mode number; 100th place is a major item, 10th place is a medium item, and unit place is a minor item.

5. The display changes a shown below each time the jog key on the set is turned up or [DISPLAY] key on the remote commander is pressed.




However in the power mode (mode number 700's), only the power adjustment value is displayed.

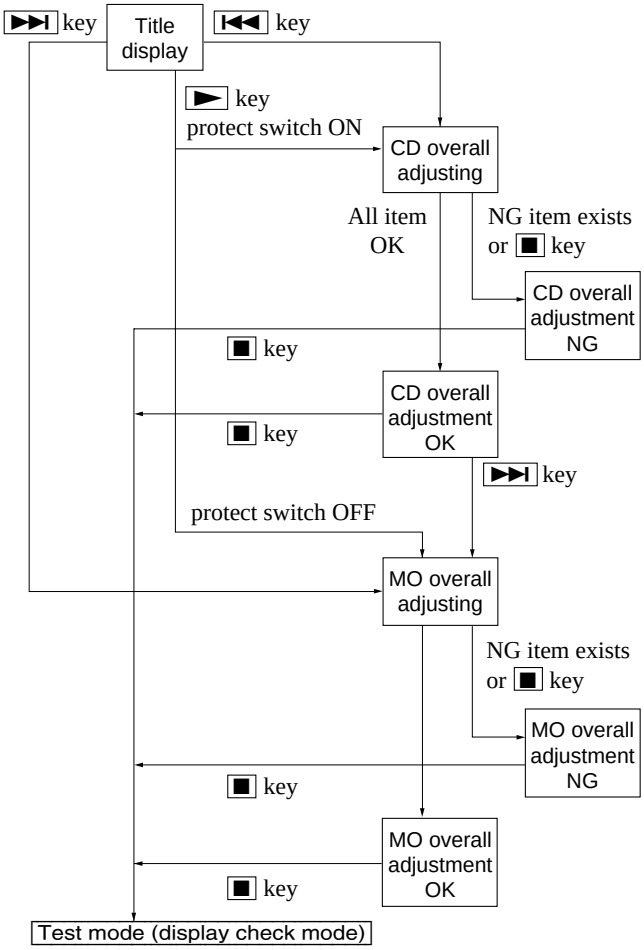



6. Quit the manual mode, and press [■] key to return to the test mode (display check mode).

### [Overall Adjustment Mode]

Mode to adjust the servo automatically in all items.
Normally, automatic adjustment is executed in this mode at the repair.
Adjust the CD first, when performing adjustment.

• Configuration of overall adjustment




For further information, refer to the Section 5 Electrical Adjustment. (See page 18)

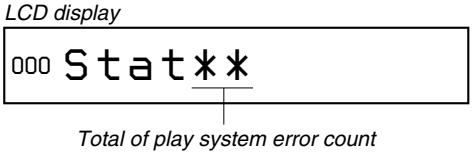
## [Sound Skip Check Result Display Mode]

This set can display and check the error count occurring during record and play.

- **Setting method of Sound Skip Check Result Display Mode**

1. Setting the test mode. (See page 11)
2. Press the ► or REC key on the set activates the sound skip check result display mode where the LCD displays as shown below.
   If microprocessor version is 1.20
   When ► key is pressed:

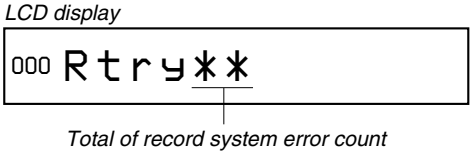
*LCD display*




*Total of play system error count*

When REC key on the set is pressed:

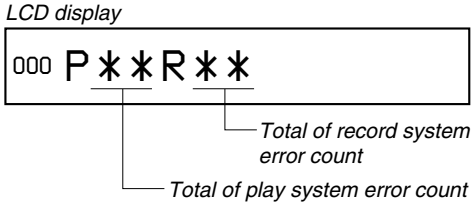
*LCD display*




*Total of record system error count*

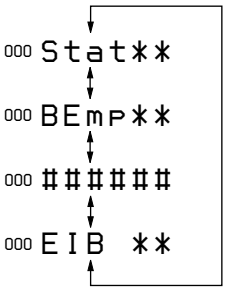
If microprocessor version is 1.30 or later
When ► or REC key on the set is pressed:

*LCD display*

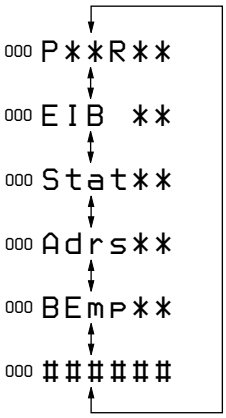



3. When ► key is pressed, the total of error count is displayed on the LCD, and each time the ▶▶| key is pressed, the error count descents one by one as shown below. Also, when |◀◀ key is pressed, the error count ascends by one. If REC key on the set is pressed, the error count during record is displayed.

*If microprocessor version is 1.20.*



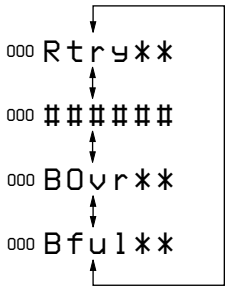

*If microprocessor version is 1.30 or later.*



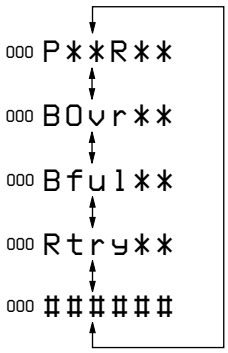

** : Sound skip check items counter (hexadecimal)
###### : 6-digit address (hexadecimal) where a sound skipped last

4. When REC key on the set is pressed, the total of error count is displayed on the LCD, and each time the ▶▶| key is pressed, the error count descents one by one as shown below. Also, when |◀◀ key is pressed, the error count ascends by one. If ► key is pressed, the error count during play is displayed.

*If microprocessor version is 1.20.*




*If microprocessor version is 1.30 or later.*




** : Sound skip check items counter (hexadecimal)
###### : 6-digit address (hexadecimal) where a sound skipped last

Error code

| | Cause of error | Description of error |
|---|---|---|
| Playback | EIB | Sound error correction error |
| | Stat | Decorder status error |
| | Adrs | Cannot access the address |
| | BEmp | Buffer becomes empty |
| Recording | BOvr | Buffer becomes full and sounds are dumped |
| | BFul | Buffer capacity lowers and data are forcibly written |
| | Rtry | Retry count over |

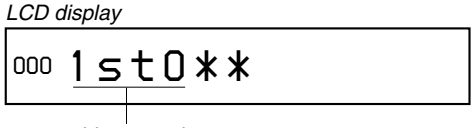
5. Quit the sound skip check result display mode, and press the ■ key to return to the test mode (display check mode).

## [Self-Diagnosis Display Mode]

- This set uses the self-diagnosis system in which if an error occurs in recording/playback mode, the error is detected by the model control and power control blocks of the microprocessor and information on the cause is stored as history in EEPROM. By viewing this history in test mode, it helps you to analyze a fault and determine its location.
  Total recording time has been recorded as optical pick-up using time, and it is compared with the total recording time in the self-diagnosis display mode to find when an error occurred.
  Clear both total recording time and the time in self-diagnosis display mode, when the optical pick-up was replaced.

1. Setting the test mode. (See page 11)
2. Move up the jog key on the set or press the [DISPLAY] key on the remote commander activates the self-diagnosis display mode where the LCD display as shown below.

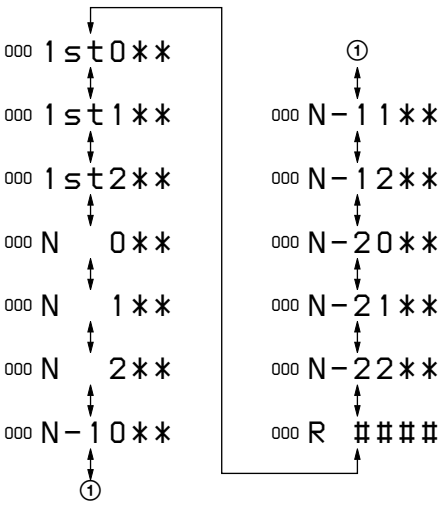
*LCD display*




*history code*

** *: Self-Diagnosis Data*

3. Then, each time [▶▶I] key is pressed, LCD display descends by one as shown below. Also, the LCD display ascends by one when [I◀◀] key is pressed.




4. Quit the self-diagnosis display mode, and press the [■] key to return to the test mode (display check mode).

**• Description of Indication History**

| History code number | Description |
|---|---|
| 1st0 | The first error |
| 1st1 | Total recording time when 1st0 was generated (Higher rank byte) |
| 1st2 | Total recording time when 1st0 was generated (Lower rank byte) |
| N 0 | The last error |
| N 1 | Total recording time when N 0 was generated (Higher rank byte) |
| N 2 | Total recording time when N 0 was generated (Lower rank byte) |
| N-10 | One error before the last. |
| N-11 | Total recording time when N-10 was generated (Higher rank byte) |
| N-12 | Total recording time when N-10 was generated (Lower rank byte) |
| N-20 | Two errors before the last. |
| N-21 | Total recording time when N-20 was generated (Higher rank byte) |
| N-22 | Total recording time when N-20 was generated (Lower rank byte) |
| REC | Total recording time * |

* Total recording time
Total recording time is recorded in minutes. It is recorded in hexadecimal format and up to 65,535 min. can be counted. It returns to "0000h" when recorder goes beyond this limit.

**• Description of Error Indication Codes**

| Problem | Indication code | Meaning of code | Description |
|---|---|---|---|
| No error | 00 | No error | |
| Servo error | 01 | Illegal access target address was specified | Attempt to access an abnormal address |
| | 02 | High temperture | High temperture |
| | 03 | Focus error | Forcus could not be applied |
| | 04 | Spindle error | Abnormal lotation of disc |
| Power error | 21 | Initial low battery | Abnormal voltage at initialization |
| | 22 | Low battery | Momentary interruption detected |
| | 23 | Low battery NI | Momentary interruption detected (NiMH) |
| | 24 | Low battery AM | Momentary interruption detected (AM) |

## [Clearing Self-Diagnosis Data and Total Recording Time]

1. Setting the test mode. (See page 11.)
2. Move up the jog key on the set or press the DISPLAY key on the remote commander activates the self-diagnosis display mode.
3. Press the ❚❚ key or REC key on the set during display of self-diagnosis data when clearing the self-diagnosis data, or during display of total recording time when clearing the total recording time. Thus, "ClrOK?" will be displayed on the LCD, and press the same key again, and when self-diagnosis data is cleared "ErrCLR" is displayed and the data is cleared. Also when total recording time is cleared, " ReeT O" is displayed and it is cleared.

## [Key Check Mode]

This set can check if the set and remote commander function normally.

• Setting Method of Key Check Mode

1. Setting the test mode. (See page 11)
2. Press the T MARK or DISPLAY key on the remote commander for several seconds activates the key check mode where all segments of LCD turn OFF. (At the last two digits of DOT section, AD value of remote commander key line is displayed in hexadecimal)
3. When each key is pressed, it is displayed on the LCD, implying that it was successfully checked as shown below. However, for the slide switch on the set, it is not checked unless it is reciprocated.

   * The key pressed to enter the key check mode was already checked at that time.

Set key

| Key | Indication |
|---|---|
| ► | PLAY |
| ►►I | FF |
| I◄◄ | FR |
| II | PAUSE |
| VOL + | VOL + |
| VOL – | VOL – |
| ■ | STOP |
| REC | REC |
| END SEARCH | END S |
| Jog (up) | JOG+ |
| Jog (down) | JOG– |
| Jog (push) | PUSH |
| T MARK | T MARK |
| HOLD (hold) | HLDon |
| HOLD (off) | HLDoff |
| SYNCHRO REC (on) | SYCon |
| SYNCHRO REC (off) | SYCoff |

Remote commander key

| Key | Indication |
|---|---|
| ►/►►I | rPLAY |
| I◄◄ | rFR |
| II | rPAUSE |
| VOL + | rVOL + |
| VOL – | rVOL – |
| ■ | rSTOP |
| PLAYMODE | rPMODE |
| DISPLAY | rDISP |

4. The test mode (display check mode) is automatically activated when all keys on the set and remote commander were checked (see above). Also, the test mode (display check mode) gets back if opening the upper panel during a key check.

# SECTION 5
# ELECTRICAL ADJUSTMENTS

## [Outline]

- In this set, automatic adjustment of CD and MO can be performed by entering the test mode. (See page 11)
  However, before starting automatic adjustment, the memory clear, power adjustment and temperature adjustment must be performed in the manual mode.
- The keys in the description refer to the keys on both set and remote commander unless otherwise specified.
  Though LCD display shows the LCD of the remote commander, same contents are also displayed on the LCD of the set.

## [Precautions for Adjustment]

1. Adjustment must be done in the test mode only.
   After adjusting, release the test mode.
2. Use the following tools and measuring instruments.
   - Test CD disc TDYS-1
     (Part No. : 4-963-646-01)
     Available SONY CD disc
   - Recorded MO disc PTDM-1
     (Part No. : J-2501-054-A)
     Available SONY MO disc (recorded)
   - Laser power meter LPM-8001
     (Part No. : J-2501-046-A)
   - Digital voltmeter
3. Unless specified otherwise, supply DC 3V from the DC IN 3V jack.
4. Switch position
   HOLD switch ..... OFF

## [Adjustment Sequence]

Adjustment must be done with the following steps.

1. NV Reset (Memory clear)
   ↓
2. Power Supply Manual Adjustment } Manual Mode
   ↓
3. Temperature correction
   ↓
4. CD Overall Adjustment
   ↓ } Overall Mode
5. MO Overall Adjustment

## [NV Reset]

**• Setting method of NV reset**

1. Select the manual mode of test mode, and set mode number 021NV Reset.

   *LCD display*

   021 ResNV

2. Press the ▮▮ key.

   *LCD display*

   021 ResOK?

3. Press the ▮▮ key once more.

   *LCD display*

   021 Res***

   ↓ NV reset (after several seconds)

   021 Reset!

4. Quit the manual mode, and activate the test mode.

## [Power Supply Manual Adjustment]

**• Adjustment sequence**

Adjustment must be done with the following steps.

1. VC PWM Duty (L) adjustment (mode number: 762)
   ↓
2. VREM PWM Duty (H) adjustment (mode number: 763)
   ↓
3. VREM PWM Duty (L) adjsutment (mode number: 764)
   ↓
4. VC PWM Duty (H) adjustment (mode number: 765)
   ↓
5. VREM PWM Duty (H) adjustment (mode number: 766)
   ↓
6. VREM PWM Duty (L) adjustment (mode number: 767)

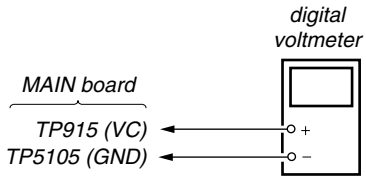
- **Adjustment method of VC PWM Duty (L) (mode number: 762)**

1. Select the manual mode of the test mode, and set the mode number 762. (See page 12)

*LCD display*

762 VclPWM

2. Connect a digital voltmeter to the TP915 (VC) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.5 ± 0.02 V. Proceed to the next step without pressing [▮▮] key if voltage is already adjusted.




3. Press the [▮▮] key to write the adjusted value.

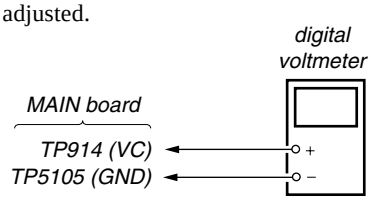
- **Adjustment method of VREM PWM Duty (H) (mode number: 763)**

1. Select the manual mode of the test mode, and set the mode number 763. (See page 12)

*LCD display*

763 VrhVcl

2. Connect a digital voltmeter to the TP914 (VR) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.75 ± 0.02 V. Proceed to the next step without pressing [▮▮] key if voltage is already adjusted.




3. Press the [▮▮] key to write the adjusted value.

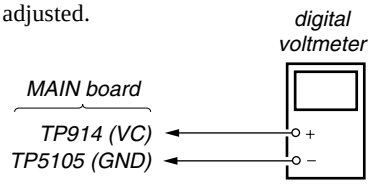
- **Adjustment method of VREM PWM Duty (L) (mode number: 764)**

1. Select the manual mode of the test mode, and set the mode number 764. (See page 12)

*LCD display*

764 VrlVcl

2. Connect a digital voltmeter to the TP914 (VR) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.5 ± 0.02 V. Proceed to the next step without pressing [▮▮] key if voltage is already adjusted.




3. Press the [▮▮] key to write the adjusted value.

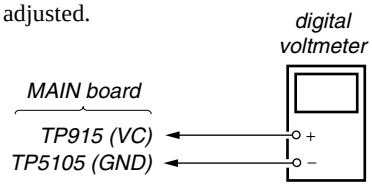
- **Adjustment method of VC PWM Duty (H) (mode number: 765)**

1. Select the manual mode of the test mode, and set the mode number 765. (See page 12)

*LCD display*

765 VchPWM

2. Connect a digital voltmeter to the TP915 (VC) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.75 ± 0.02 V. Proceed to the next step without pressing [▮▮] key if voltage is already adjusted.




3. Press the [▮▮] key to write the adjusted value.

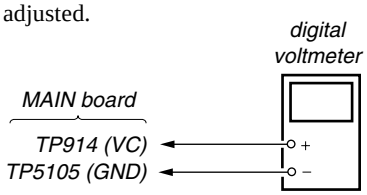
- **Adjustment method of VREM PWM Duty (H) (mode number: 766)**

1. Select the manual mode of the test mode, and set the mode number 766. (See page 12)

*LCD display*

766 VrhVch

2. Connect a digital voltmeter to the TP914 (VR) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.75 ± 0.02 V. Proceed to the next step without pressing [▮▮] key if voltage is already adjusted.




3. Press the [▮▮] key to write the adjusted value.

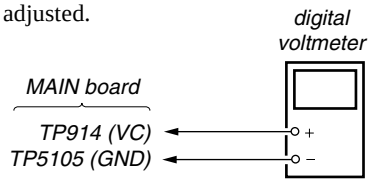
- **Adjustment method of VREM PWM Duty (L) (mode number: 767)**

1. Select the manual mode of the test mode, and set the mode number 767. (See page 12)

*LCD display*

767 VrlVch

2. Connect a digital voltmeter to the TP914 (VR) on the MAIN board, and adjust [VOL +] key (voltage up) or [VOL –] key (voltage down) so that the voltage becomes 2.5 ± 0.02 V. Proceed to the next step without pressing [▮▮] key if voltage is already adjusted.




3. Press the [▮▮] key to write the adjusted value.

## [Temperature Correction]

**• Adjustment Method of temperature correction**

1. Select the manual mode of test mode, and set the mode number 014. (See page 12)

   *LCD display*

   014 SetTmP

2. Measure the ambient temperature.
3. Adjust with [VOL +], [VOL –] key so that the adjusted value (hexadecimal value) becomes the ambient temperature. (Initial value: 14h = 20 °C, Adjusting range: 80h to 7fh (–128 °C to +127 °C)
4. Press the [II] key to write the adjusted value.

## [Overall Adjustment Mode]

**• Adjustment Method of Overall Adjustment Mode**

1. Setting the test mode. (See page 11)
2. Press the [I◄◄] or [VOL –] key activates the overall adjustment mode where the LCD display as shown below.

   *LCD display*

   000 ASSY** 💿

   💿 : *(DISC MARK) When power adjustment "H" finished; Outward ON*
   *When power adjustment "L" finished; Inward ON*
   *Power supply is not yet adjusted unless both outward and inward disc marks are ON.*
   *Note: Disc mark is displayed on the remote commander LCD only.*

   ** : *Left side = MO auto adjustment information*
   *F : Auto adjustment finished*
   *1 : Manual adjustment remains*
   *0 : Not adjusted yet*
   *Right side = CD auto adjustment information*
   *F : CD auto adjustment finished*
   *1 : Manual adjustment remains (not auto adjustment)*
   *0 : Not adjusted yet*

3. Insert the CD test disc TDYS-1 (Parts No.4-963-646-01) or an available SONY CD disc.
4. Press [►] key. The system discriminates between CD and MO and performs automatic adjustment for CD.
   Also, if [I◄◄] key is pressed, CD is adjusted automatically.

   *LCD display*

   %%% CD RUN

   *%%%: Manual mode number being executed*

• CD Automatic Adjustment item

| Mode No. | Description |
|---|---|
| 312 | CD electrical offset adjustment |
| 313 | |
| 314 | |
| 328 | CD TWPP gain adjustment |
| 321 | CD tracking error gain adjustment |
| 323 | CD tracking error offset adjustment |
| 332 | |
| 336 | CD ABCD level adjustment |
| 344 | CD focus gain adjustment |
| 345 | CD tracking gain adjustment |
| 521 | CD two-axis sensibility adjustment |
| 522 | |
| 341 | CD focus bias adjustment |

5. If the result of automatic adjustment is OK, the following display appears in the LCD:

   *LCD display*

   341 CD OK

6. If the result of automatic adjustment is NG, the following display appears in the LCD:

   *LCD display*

   ### NG

   *###: Overall adjustment. NG mode number*

7. If NG, set the manual mode. Perform automatic adjustment for the items not accepted. (See page 12)
8. If CD adjustment is OK, insert an available SONY MO disc (recorded).
   At this time, be sure to turn OFF the disc protect switch.
9. Press [►] key. The system discriminates between CD and MO and performs automatic adjustment for the MO disc.
   Also, if [►►I] key is pressed, MO is adjusted automatically.
   However, when CD adjustment is not finished, "SetCD!" is blinking on the LCD and MO adjustment is not executed.

   *LCD display*

   %%% MO RUN

   *%%%: Manual mode number being executed*

• MO Automatic Adjustment item

| Mode No. | Description |
|---|---|
| 112 | MO electrical offset adjustment |
| 113 | |
| 114 | |
| 118 | |
| 221 | Lower reflection CD tracking error gain adjustment |
| 223 | Lower reflection CD tracking error offset adjustment |
| 232 | |
| 236 | Lower reflection CD ABCD level adjustment |
| 244 | Lower reflection CD focus gain adjustment |
| 245 | Lower reflection CD tracking gain adjustment |
| 121 | MO tracking error gain adjustment |
| 122 | MO tracking error offset adjustment |
| 134 | MO TWPP gain adjustment |
| 131 | MO double speed read TWPP offset adjustment |
| 132 | |
| 136 | MO ABCD level adjustment |
| 144 | MO focus gain adjustment |
| 145 | MO tracking gain adjustment |
| 434 | MO write TWPP gain adjustment |
| 431 | MO write TWPP offset adjustment |
| 432 | |
| 436 | MO write ABCD level adjustment |
| 445 | MO write tracking gain adjustment |
| 411 | MO normal speed read TWPP offset adjustment |
| 412 | |
| 448 | 32 cluster full recording |
| 141 | MO focus bias adjustment |

10. If the result of automatic adjustment is OK, the following display appears in the LCD:

*LCD display*

141 MO OK

11. If the result of automatic adjustment is NG, the following display appears in the LCD:

*LCD display*

### NG

*###: Overall adjustment. NG mode number*

12. If NG, set the manual mode. Perform automatic adjustment for the items not accepted. (See page 12)
13. To clear the data in overall adjustment mode, set the manual mode and change the mode number 021 (Res NV) to reset the NV. (See page 12)
14. When both CD and MO overall adjustments are OK, set the manual mode and clear the clock data.
    For the microprocessor version 1.20 or later, set the mode number 043 (Resume), and press the ▮▮ key.

*LCD display*

043 Resume

↓ Press the ▮▮ key, historical data clear

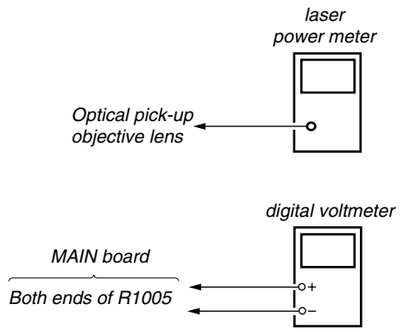
043 ResClr

**Note:** In step 10, set the clock data to 99Y11M11D11H11M00S, and in step 14, do not set the clock.



## [Laser Power Check]

**Connection :**

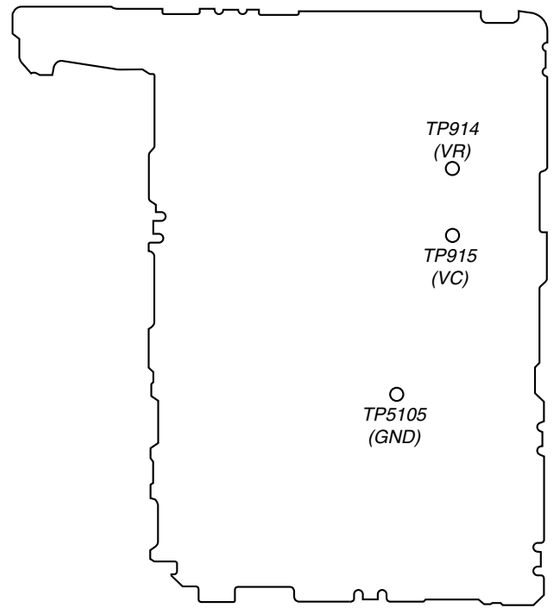



**Check Method :**

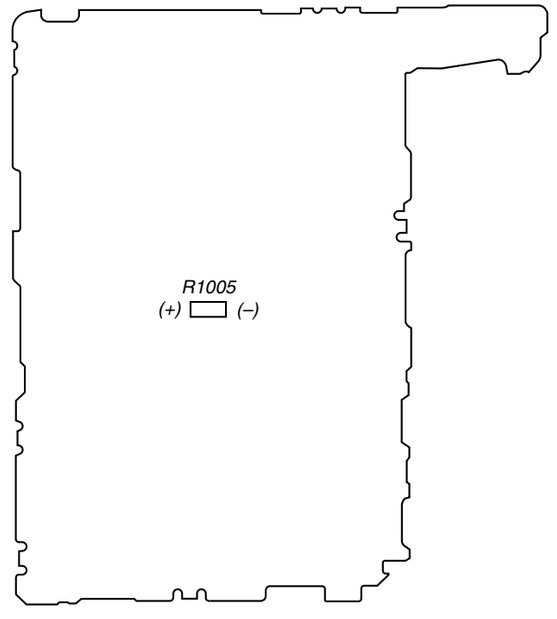
1. Select the manual mode of test mode, and set the laser power adjusting mode. (mode number 010)
2. Press the ⏮ key continuously until the optical pick-up moves to the most inward track.
3. Open the cover and set the laser power meter on the objective lens of the optical pick-up.
4. Press the ▶ key, and set the laser MO read adjustment mode. (mode number 011)
5. Check that the laser power meter reading is 0.81 ± 0.08 mW.
6. Check that the voltage both ends of resitor R1005 at this time is below 44 mV.
7. Press the ▶ key, and set the laser CD read adjustment mode. (mode number 012)
8. Check that the laser power meter reading is 0.97 ± 0.10 mW.
9. Check that the voltage both ends of resitor R1005 at this time is below 44 mV.
10. Press the ▶ key, and set the laser MO write adjustment mode. (mode number 013)
11. Check that the laser power meter reading is 4.95 ± 0.50 mW.
12. Check that the voltage both ends of resister R1005 at this time is below 80 mV.
13. Press the ■ key.
14. Release the test mode.

**Connecting Location:**

**– MAIN BOARD (Component Side) –**

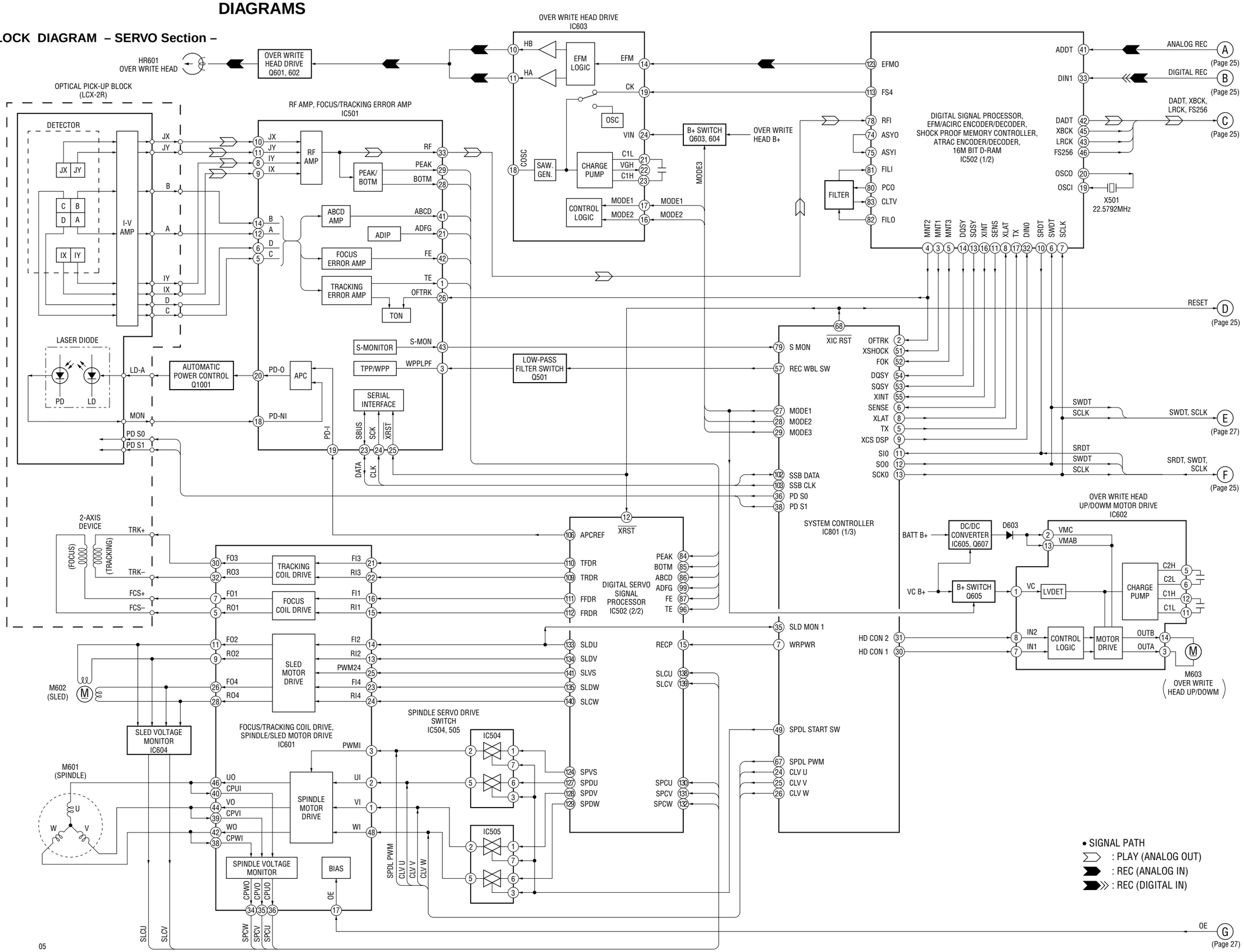



**– MAIN BOARD (Conductor Side) –**

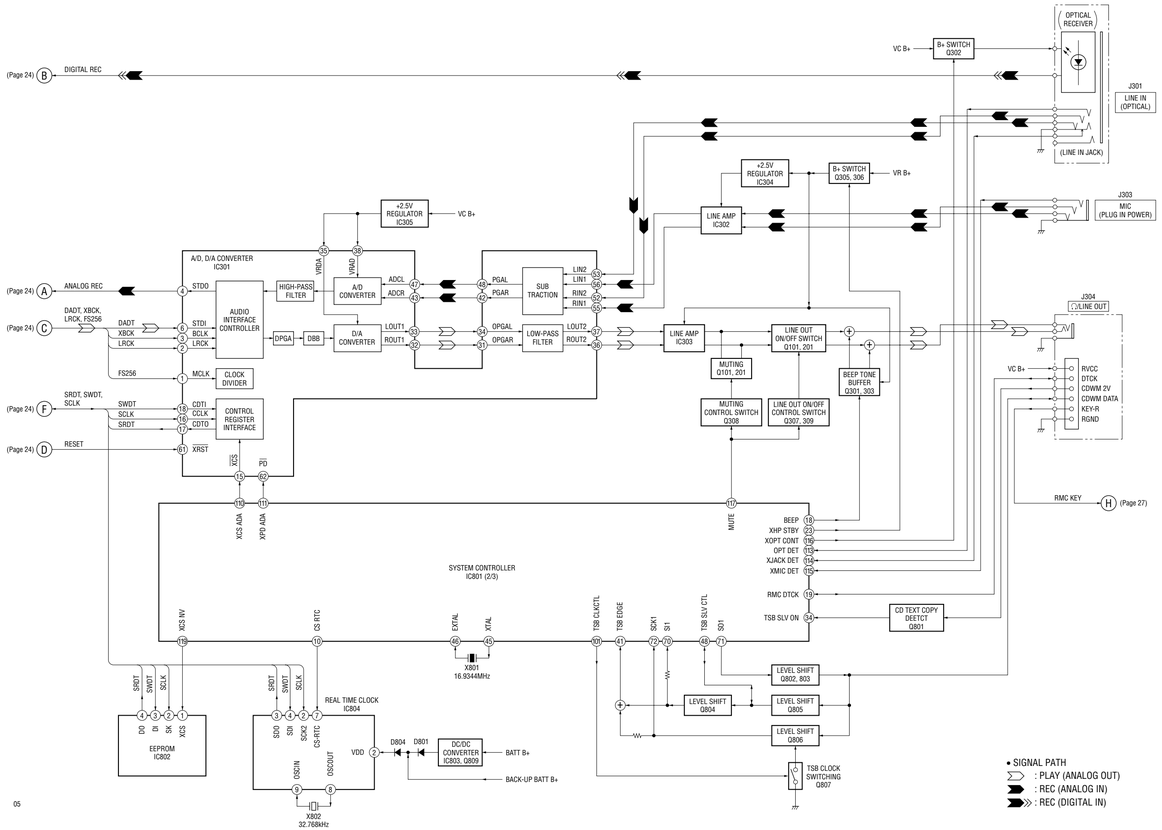


# SECTION 6
# DIAGRAMS

## 6-1. BLOCK DIAGRAM – SERVO Section –



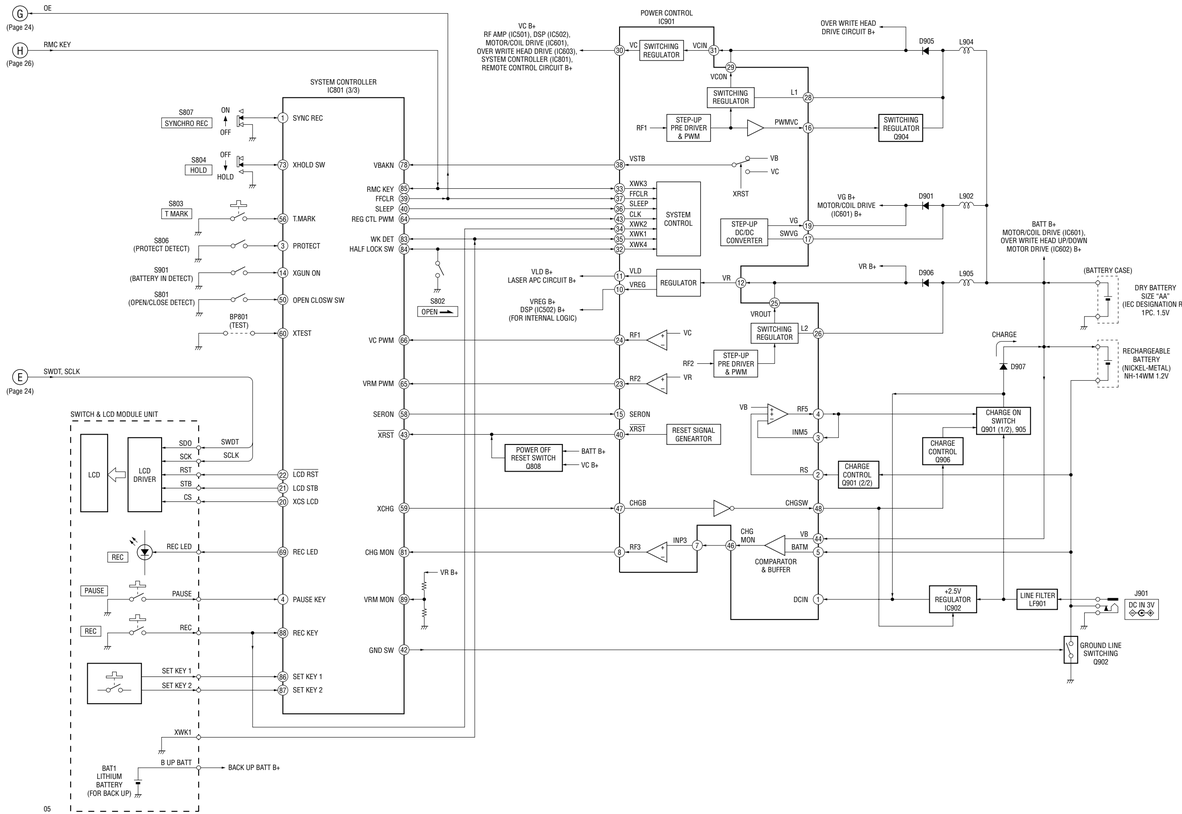
## 6-2. BLOCK DIAGRAM – A/D, D/A CONVERTER, AUDIO Section –








## 6-3. BLOCK DIAGRAM – KEY CONTROL/DISPLAY/POWER SUPPLY Section –



- **Semiconductor Location**

| Ref. No. | Location |
|---|---|
| D301 | B-10 |
| D302 | B-9 |
| D303 | C-4 |
| D304 | B-10 |
| D501 | G-10 |
| D600 | F-6 |
| D601 | F-9 |
| D602 | G-6 |
| D603 | H-9 |
| D801 | E-12 |
| D802 | F-12 |
| D803 | D-11 |
| D804 | F-11 |
| D901 | D-7 |
| D902 | C-9 |
| D903 | E-9 |
| D905 | C-11 |
| D906 | C-11 |
| D907 | D-11 |
| IC301 | C-12 |
| IC302 | C-13 |
| IC303 | B-11 |
| IC304 | B-4 |
| IC305 | D-13 |
| IC501 | F-10 |
| IC502 | G-12 |
| IC504 | E-11 |
| IC505 | E-12 |
| IC601 | E-12 |
| IC602 | H-9 |
| IC603 | G-9 |
| IC604 | F-12 |
| IC605 | G-9 |
| IC801 | H-11 |
| IC802 | H-10 |
| IC803 | E-11 |
| IC804 | G-11 |
| IC901 | D-10 |
| IC902 | C-10 |
| Q101 | B-9 |
| Q102 | B-11 |
| Q201 | C-10 |
| Q202 | B-11 |
| Q301 | B-10 |
| Q302 | C-13 |
| Q303 | B-10 |
| Q305 | C-11 |
| Q306 | H-9 |
| Q307 | C-10 |
| Q308 | B-11 |
| Q309 | B-10 |
| Q501 | E-11 |
| Q601 | F-9 |
| Q602 | F-9 |
| Q603 | G-7 |
| Q604 | H-9 |
| Q605 | G-9 |
| Q607 | H-9 |
| Q801 | G-13 |
| Q802 | F-13 |
| Q803 | F-13 |
| Q804 | F-13 |
| Q805 | F-13 |
| Q806 | F-12 |
| Q807 | F-13 |
| Q809 | D-11 |
| Q901 | C-6 |
| Q902 | D-9 |
| Q904 | C-11 |
| Q905 | C-6 |
| Q906 | C-10 |
| Q1001 | E-11 |

**Note on Schematic Diagram:**

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- ▭ : panel designation.

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬▬ : B+ Line.
- Power voltage is dc 3 V and fed with regulated dc power supply from external power voltage jack.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PLAYBACK
  ( ) : RECORD
  ✻ : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  Σ : PLAYBACK (ANALOG OUT)
  ▶ : PLAYBACK (ANALOG IN)
  ▶▶▶ : RECORD (DEGITAL IN)
- Abbreviation
  CND : Canadian model
  FR : French model
  HK : Hong Kong model
  JEW : Tourist model

✻ IC502 and IC801 are not replaceable

- The voltage and waveform of CSP (chip size package) cannot be measured, because its lead layout is different form that of conventional IC.

**Note on Printed Wiring Board:**

- ⟐——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▒ : Pattern from the side which enables seeing.

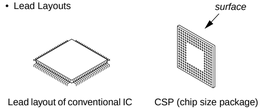
(The other layers' patterns are not indicated.)

Caution:
Pattern face side: (Conductor Side) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side) Parts on the parts face side seen from the parts face are indicated.

- Main board is four-layer printed board. However, the patterns of layers 2 and 3 have not been included in this diagrams.

✻ IC502 and IC801 are not replaceable

- Lead Layouts

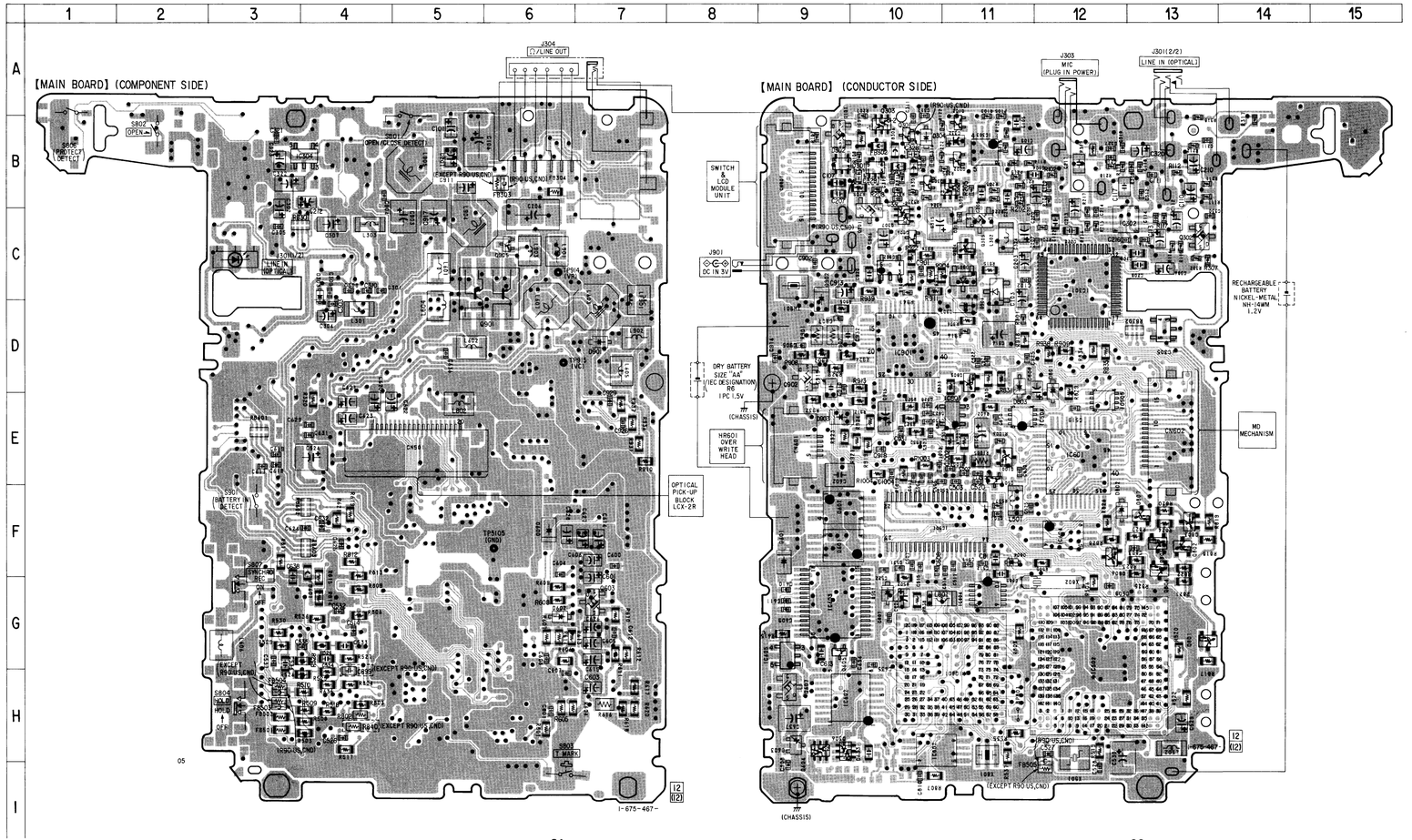


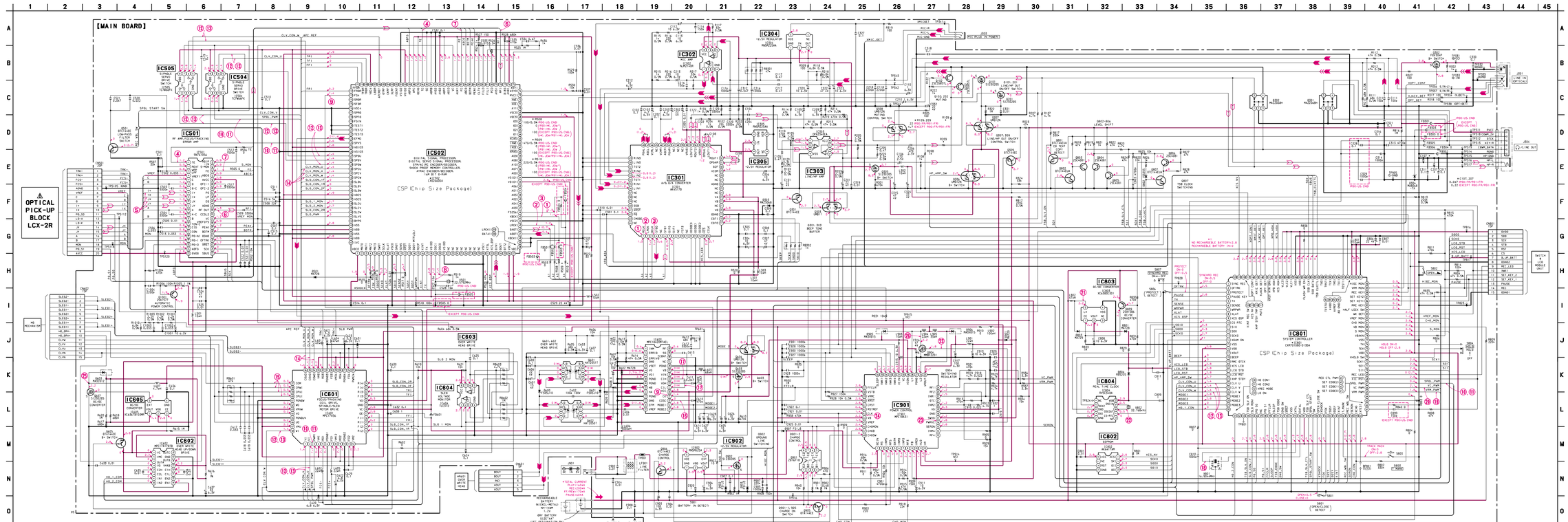

Lead layout of conventional IC CSP (chip size package)





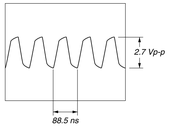
## 6-4. PRINTED WIRING BOARD



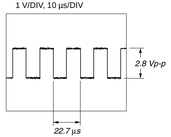

[MAIN BOARD]
OPTICAL PICK-UP BLOCK LCX-2R
IC501
IC502
IC503
IC504
IC505
IC601
IC602
IC603
IC604
IC605
IC801
IC802
IC803
IC804
IC901
IC902
IC301
IC302
IC303
IC304
IC305
CSP (Chip Size Package)
SYSTEM CONTROLLER
DIGITAL SIGNAL PROCESSOR, ELECTRONIC SKIP PROTECTION, EFM+ACIRC ENCODER/DECODER, SHOCK PROOF MEMORY CONTROLLER, ATRAC DECODER, SPEED CONVERTER, SPI BIT STREAM
SYSTEM CONTROLLER
CXP72001-001Q4
SPINDLE SERVO DRIVER, SLED SERVO DRIVE, SPINDLE MOTOR DRIVE
LM4926MH
SPINDLE SERVO DRIVE, SLED SERVO DRIVE, SPINDLE MOTOR DRIVE
LM4926MH
RF AMP, FOCUS/TRACKING ERROR AMP
BU9852KV
FOCUS/TRACKING/SLED/SPINDLE MOTOR DRIVE
MPC17556
DIGITAL SERVO AMP
MPC17557
DIGITAL SERVO AMP
MPC17557
AUTOMATIC POWER CONTROL
MPC17558
DC/DC CONVERTER
MPC17559
DC/DC CONVERTER
MPC17559
DC/DC CONVERTER
MPC17559
SYSTEM CONTROLLER
CXP72001-001Q4
DC/DC CONVERTER
MPC17559
INITIAL TIME CLOCK
PCF8583T
DC/DC CONVERTER
MPC17559
POWER CONTROL
LC7951
+2.5V REGULATOR
NJM2387F25
+3.3V REGULATOR
NJM2387F33
+3.3V REGULATOR
NJM2387F33
+5V REGULATOR
NJM2387F50
LINE/HP AMP
NJM4558MD
LINE/HP OUT
NJM4558MD
REC AMP
NJM4558MD
MIC/LINE SELECTOR
NJM2100M
MIC/LINE SELECTOR
NJM2100M
MIC AMP
NJM4558MD
MIC AMP
NJM4558MD
MIC/LINE SELECTOR
NJM2100M
MIC/LINE SELECTOR
NJM2100M
MIC/LINE SELECTOR
NJM2100M

## • Waveforms

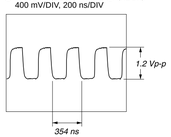
❶ IC301 ① (MCLK), IC502 ㊽ (FS256)
1 V/DIV, 50 ns/DIV



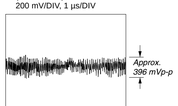

❷ IC301 ② (LRCK), IC502 ㊾ (LRCK)
1 V/DIV, 10 µs/DIV



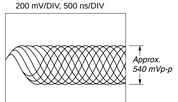

❸ IC301 ③ (BCLK), IC502 ㊿ (XBCK)
400 mV/DIV, 200 ns/DIV



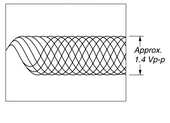

❹ IC501 ① (TE), IC502 ㊽ (TE)
(PLAY Mode)
200 mV/DIV, 1 µs/DIV



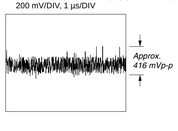

❺ IC501 ⑧, ⑨, ⑩, ⑪ (IY, IX, JX,JY)
(PLAY Mode)
200 mV/DIV, 500 ns/DIV



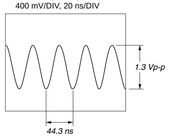

❻ IC501 ㊷ (RF), IC502 ㊼ (RFI) (PLAY Mode)
400 mV/DIV, 1 µs/DIV



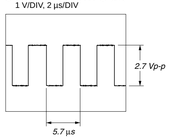

❼ IC501 ㊸ (FE), IC502 ㊽ (FE) (PLAY Mode)
200 mV/DIV, 1 µs/DIV



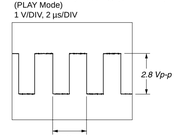

❽ IC502 ㊾ (OSCO)
400 mV/DIV, 20 ns/DIV



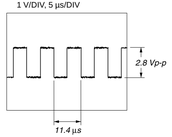

❾ IC502 ㊷ (FS4), IC603 ⑲ (CK)
1 V/DIV, 2 µs/DIV



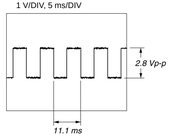

❿ IC502 ㊸(SPVS), IC504 ①, ②
IC601 ③ (PWMI), IC801 ㉕ (SPDL PWM)
(PLAY Mode)
1 V/DIV, 2 µs/DIV



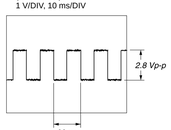

⓫ IC502 ㊹(SPVS), IC504 ①, ②
IC601 ③ (PWMI), IC801 ㉕ (SPDL PWM)
(REC Mode)
1 V/DIV, 5 µs/DIV



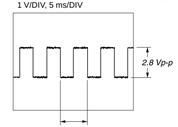

⓬ IC502 ㊱, ㊲, ㊳(SPDU, SPDV, SPDW)
IC504 ④, ⑤, IC505 ⑦, ②, ⑤, ⑥
IC601 ①, ②, ㉙ (VI, UI, WI)
IC801 ㉓, ㉔, ㉙ (CLV U, CLV V, CLV W)
(PLAY Mode)
1 V/DIV, 5 ms/DIV



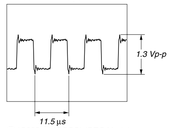

⓭ IC502 ㊱, ㊲, ㊳(SPDU, SPDV, SPDW)
IC504 ④, ⑤, IC505 ⑦, ②, ⑤, ⑥
IC601 ①, ②, ㉙ (VI, UI, WI)
IC801 ㉓, ㉔, ㉙ (CLV U, CLV V, CLV W)
(REC Mode)
1 V/DIV, 10 ms/DIV



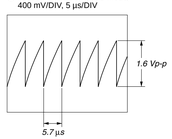

⓮ IC502 ㊱, ㊲, ㊳(SPCU, SPCV, SPCW)
IC601 ㉘, ㉙, ㉚ (COWO, COVO, COUO)
1 V/DIV, 5 ms/DIV



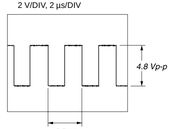

⓯ IC601 ㉗, ㉘, ㉙, ㉚ (COM, CPWI, CPVI, CPUI)
400 mV/DIV, 5 µs/DIV



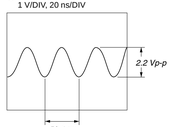

⓰ IC603 ⑱ (COSC) (REC Mode)
400 mV/DIV, 5 µs/DIV



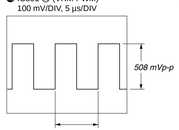

⓱ IC603 ㉑, ㉒ (CIH, CIL) (REC Mode)
2 V/DIV, 2 µs/DIV



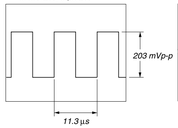

⓲ IC801 ㉘ (XTAL)
1 V/DIV, 20 ns/DIV



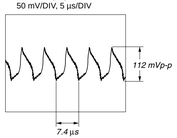

⓳ IC801 ㉜ (VRM PWM)
100 mV/DIV, 5 µs/DIV



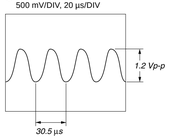

⓴ IC801 ㉖ (VC PWM)
40 mV/DIV, 5 µs/DIV



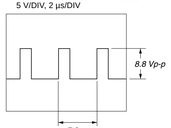

㉑ IC803 ⑤ (LX)
50 mV/DIV, 5 µs/DIV



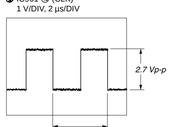

㉒ IC804 ⑥ (OSCOUT)
500 mV/DIV, 20 µs/DIV



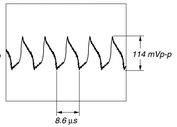

㉓ IC901 ⑬ (PWMVC), Q904 (Gate)
5 V/DIV, 2 µs/DIV



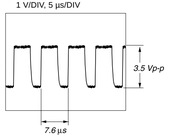

㉔ IC901 ⑭ (CLK)
1 V/DIV, 2 µs/DIV




㉕ Q607 (Drain)
50 mV/DIV, 5 µs/DIV

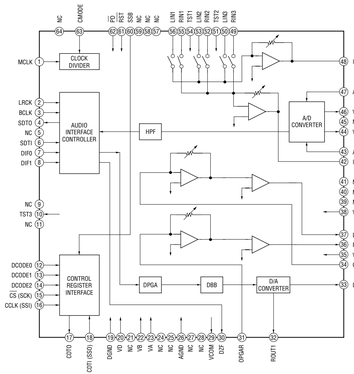



㉖ Q904 (Drain)
1 V/DIV, 5 µs/DIV

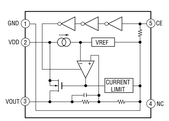



## • IC Block Diagrams

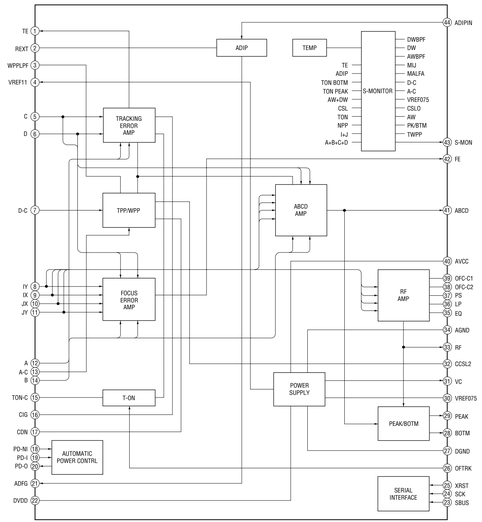
### IC301 AK4517BVQ-L



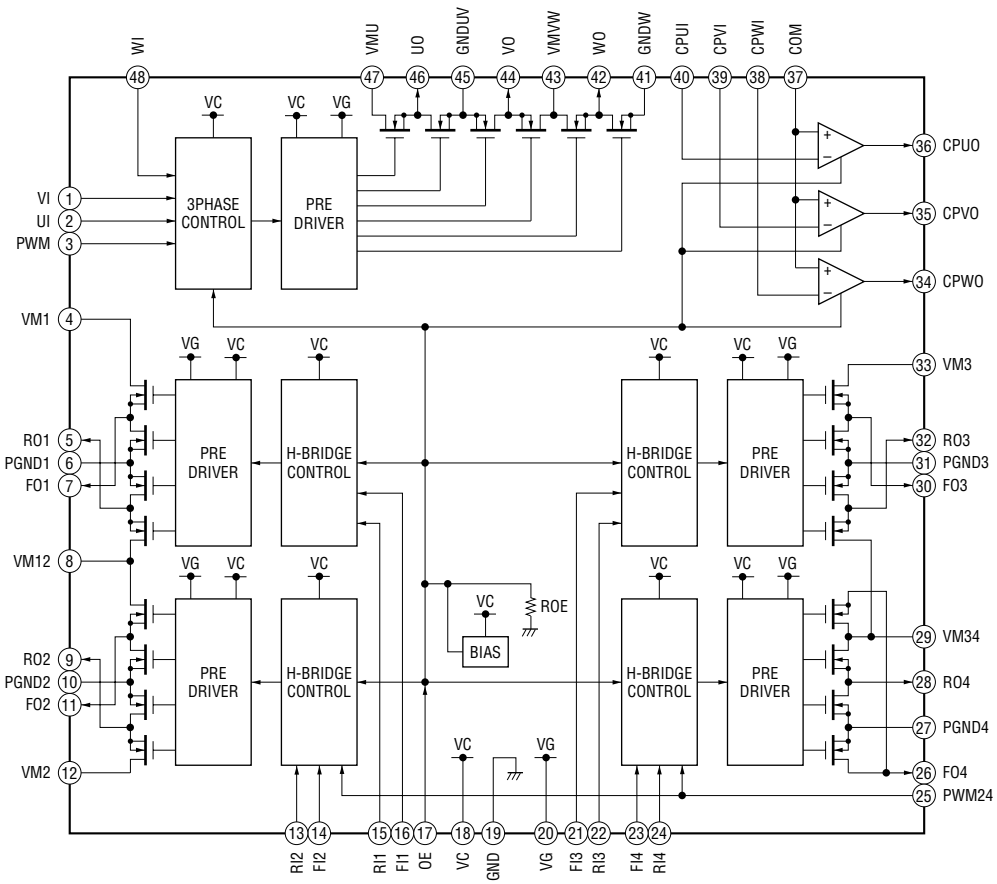

### IC304, 305 RN5RZ25AA-TR



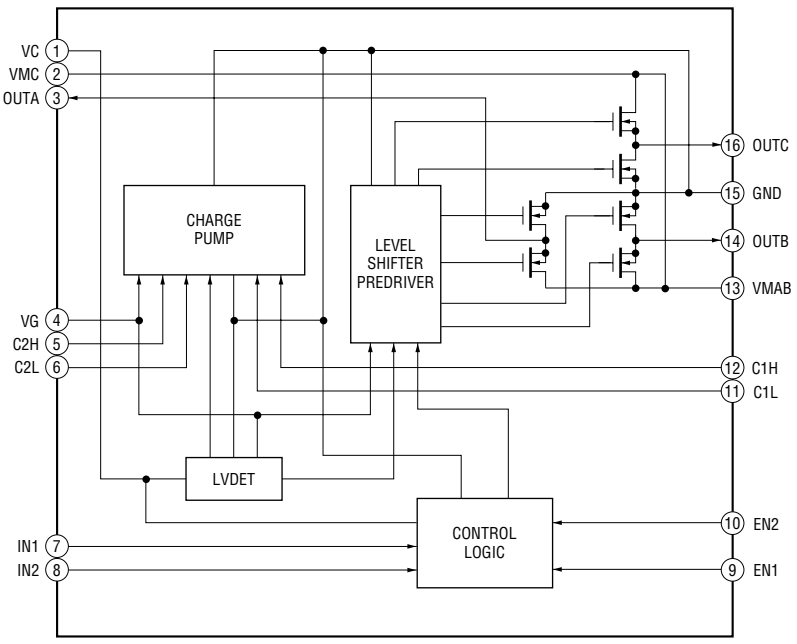

### IC501 SN761056ADBT



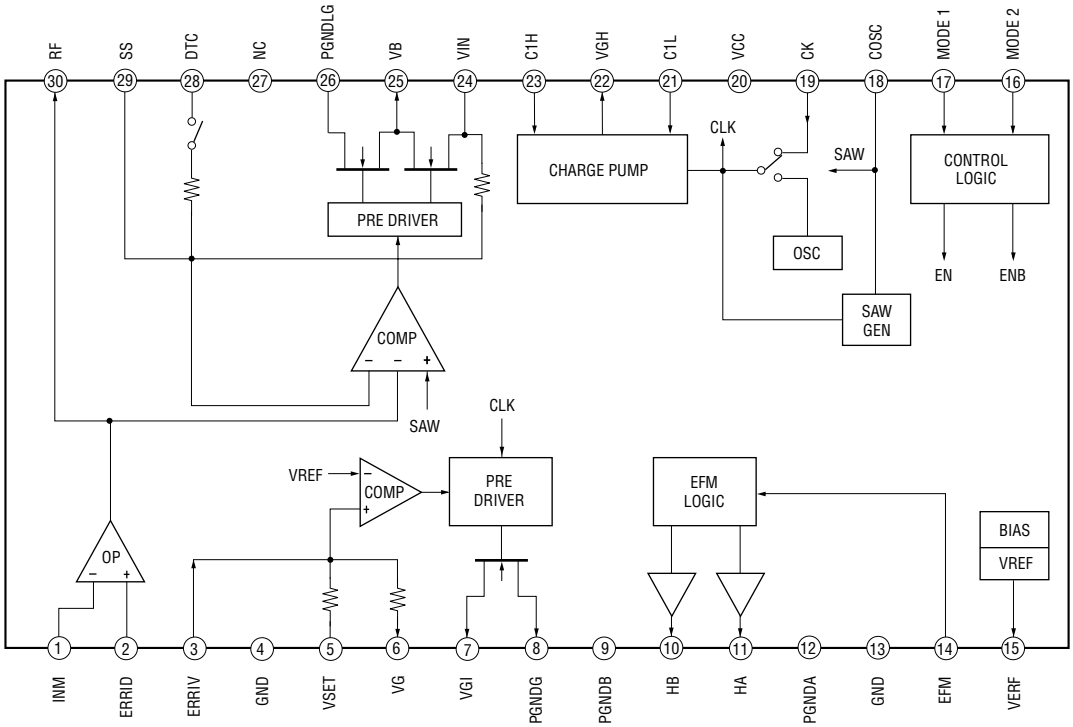
**IC601 MPC17A56FTA**



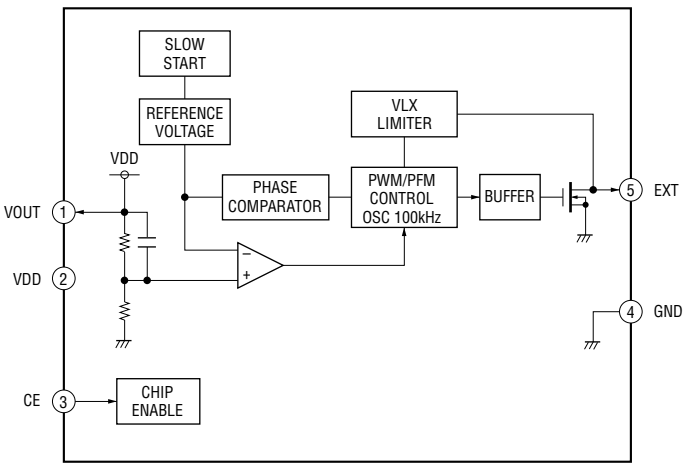

**IC602 MPC17A17XDTBR2**



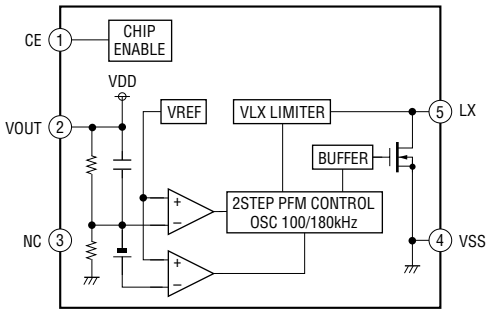
**IC603 MPC18A20MTAEL**



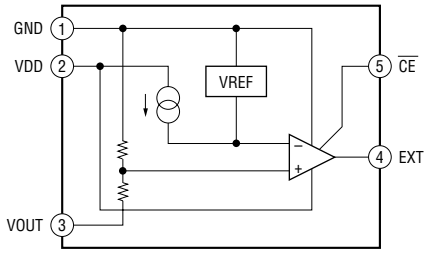

**IC605 XC6367B103MR**



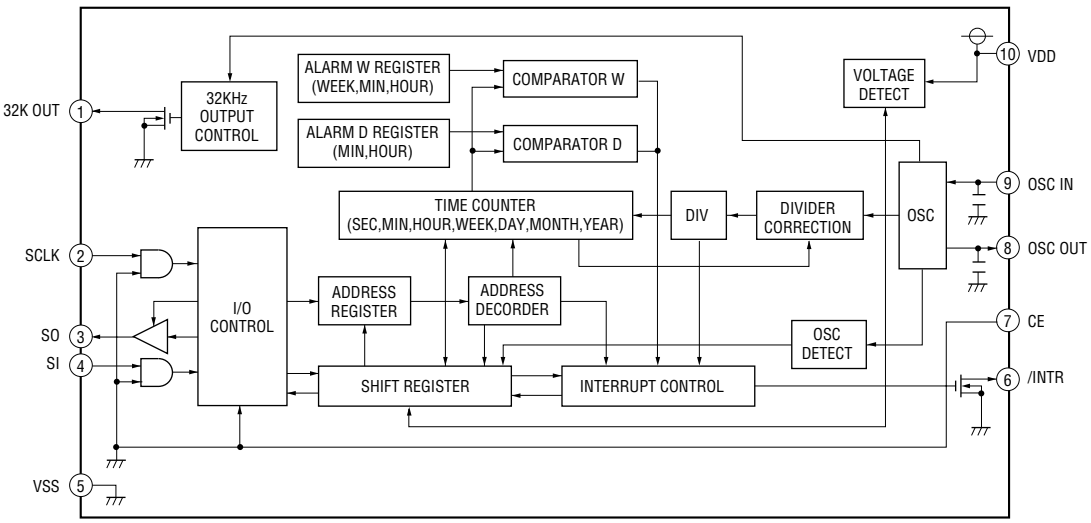

**IC803 XC6383C301MR**



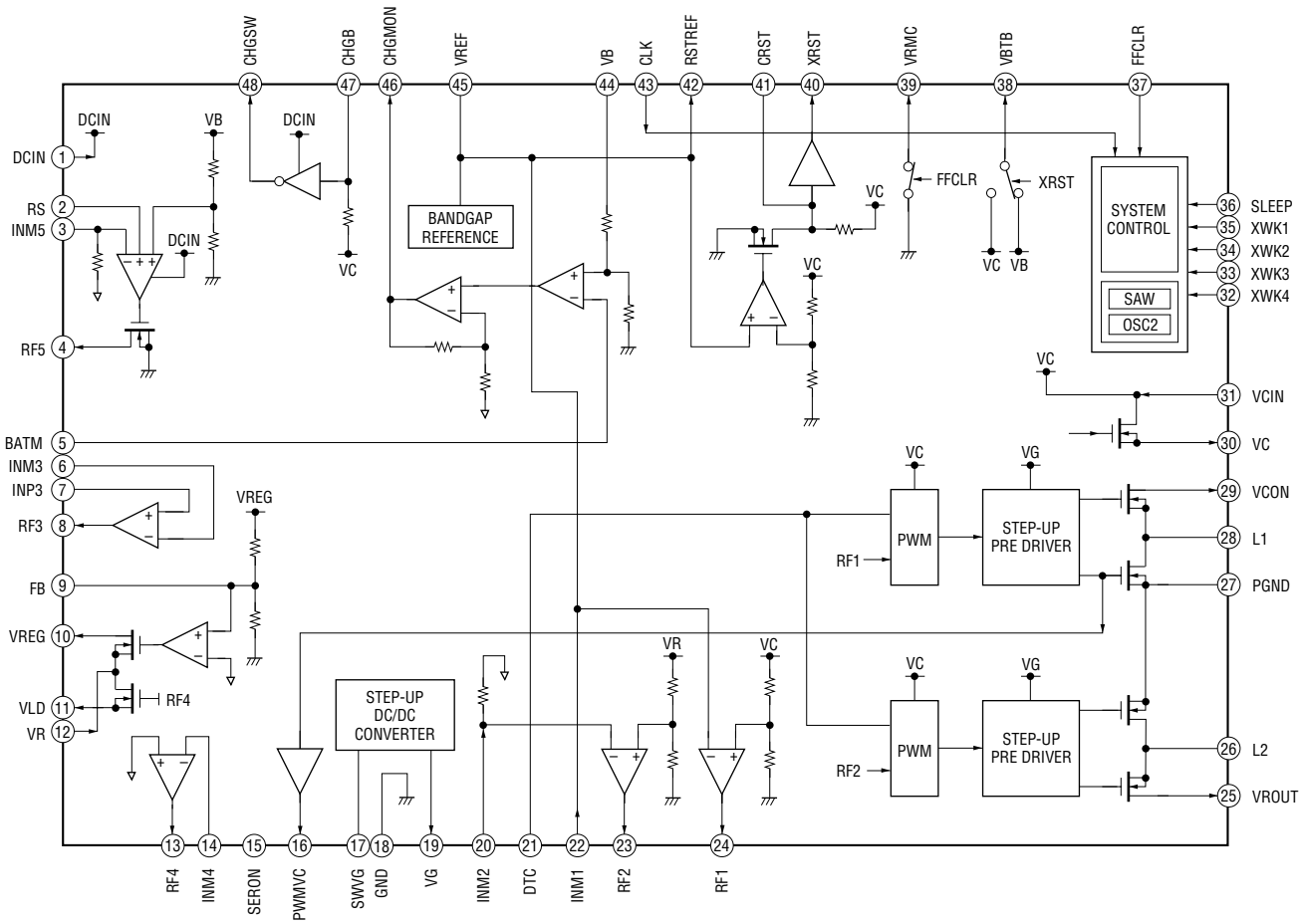

**IC902 RN5RG25AA-TR**



**IC804 RV5C348A-E2**




**IC901 MPC18A31FTA**



## 6-6. IC PIN FUNCTION DESCRIPTION

**• MAIN BOARD IC501 SN761056ADBT (RF AMP, FOCUS/TRACKING ERROR AMP)**

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 1 | TE | O | Tracking error signal output to the CXD2660GA (IC502) |
| 2 | REXT | — | Connected to the external resistor for the ADIP amplifier control |
| 3 | WPPLPF | — | Connected to the external capacitor for low-pass filter of the TPP/WPP |
| 4 | VREF11 | O | Reference voltage output terminal (+1.1V) |
| 5 | C | I | Signal input from the optical pick-up detector (C) |
| 6 | D | I | Signal input from the optical pick-up detector (D) |
| 7 | D-C | I | Signal input from the optical pick-up detector (D) (AC input) |
| 8 | IY | I | I-V converted RF signal IY input from the optical pick-up block detector |
| 9 | IX | I | I-V converted RF signal IX input from the optical pick-up block detector |
| 10 | JX | I | I-V converted RF signal JX input from the optical pick-up block detector |
| 11 | JY | I | I-V converted RF signal JY input from the optical pick-up block detector |
| 12 | A | I | Signal input from the optical pick-up detector (A) |
| 13 | A-C | I | Signal input from the optical pick-up detector (A) (AC input) |
| 14 | B | I | Signal input from the optical pick-up detector (B) |
| 15 | TON-C | — | Connected to the external capacitor for the TON hold |
| 16 | CIG | — | Connected to the external capacitor for low-pass filter of the NPP divider denominator |
| 17 | CDN | — | Connected to the external capacitor for low-pass filter of the CSL divider denominator |
| 18 | PD-NI | I | Light amount monitor input terminal (non-invert input) |
| 19 | PD-I | I | Light amount monitor input terminal (invert input) |
| 20 | PD-O | O | Light amount monitor output terminal |
| 21 | ADFG | O | ADIP duplex FM signal (22.05 kHz ± 1 kHz) output to the CXD2660GA (IC502) |
| 22 | DVDD | — | Power supply terminal (+2.4V) (digital system) |
| 23 | SBUS | I/O | Two-way SSB serial data bus with the system controller (IC801) |
| 24 | SCK | I | SSB serial clock signal input from the system controller (IC801) |
| 25 | $\overline{\text{XRST}}$ | I | Reset signal input from the system controller (IC801) "L": reset |
| 26 | OFTRK | I | Off track signal input from the CXD2660GA (IC502) |
| 27 | DGND | — | Ground terminal (digital system) |
| 28 | BOTM | O | Light amount signal (RF/ABCD) bottom hold output to the CXD2660GA (IC502) |
| 29 | PEAK | O | Light amount signal (RF/ABCD) peak hold output to the CXD2660GA (IC502) |
| 30 | VREF075 | — | Connected to the external capacitor for the internal reference voltage |
| 31 | VC | O | Middle point voltage (+1.2V) generation output terminal |
| 32 | CCSL2 | — | Connected to the external capacitor for low-pass filter of the TPP/WPP |
| 33 | RF OUT | O | Playback EFM RF signal output to the CXD2660GA (IC502) |
| 34 | AGND | — | Ground terminal (analog system) |
| 35 | EQ | — | Connected to the external capacitor for the RF equalizer |
| 36 | LP | — | Connected to the external capacitor for the RF equalizer |
| 37 | PS | — | Connected to the external capacitor for the RF equalizer |
| 38 | OFC-2 | — | Connected to the external capacitor for the RF AC coupling |
| 39 | OFC-1 | — | Connected to the external capacitor for the RF AC coupling |
| 40 | AVCC | — | Power supply terminal (+2.4V) (analog system) |
| 41 | ABCD | O | Light amount signal (ABCD) output to the CXD2660GA (IC502) |
| 42 | FE | O | Focus error signal output to the CXD2660GA (IC502) |
| 43 | S-MON | O | Servo signal monitor output to the system controller (IC801) |
| 44 | ADIP-IN | I | ADIP duplex FM signal (22.05 kHz ± 1 kHz) input terminal Not used |

• **MAIN BOARD IC502 CXD2660GA**
**(DIGITAL SIGNAL PROCESSOR, DIGITAL SERVO SIGNAL PROCESSOR, EFM/ACIRC ENCODER/DECODER, SHOCK PROOF MEMORY CONTROLLER, ATRAC ENCODER/DECODER, 16M BIT D-RAM)**

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 1 | VDC0 | — | Power supply terminal (+1.8V) (for internal logic) |
| 2 | MNT0 | I/O | Not used (open) |
| 3 | MNT1 | O | Recording shock detect signal output to the system controller (IC801) |
| 4 | MNT2 | O | Off track signal output to the SN761056ADBT (IC501) and system controller (IC801) |
| 5 | MNT3 | O | Focus OK signal output to the system controller (IC801)<br>"H": is output when focus is on ("L": NG) |
| 6 | SWDT | I | Serial data input from the system controller (IC801) |
| 7 | SCLK | I (S) | Serial clock signal input from the system controller (IC801) |
| 8 | XLAT | I (S) | Serial data latch pulse input from the system controller (IC801) |
| 9 | VSC0 | — | Ground terminal (for internal logic) |
| 10 | SRDT | O (3) | Serial data output to the system controller (IC801) |
| 11 | SENS | O (3) | Internal status (SENSE) output to the system controller (IC801) |
| 12 | $\overline{\text{XRST}}$ | I (S) | Reset signal input from the system controller (IC801) "L": reset |
| 13 | SQSY | O | Subcode Q sync (SCOR) output the system controller (IC801)<br>"L" is output every 13.3 msec Almost all, "H" is output |
| 14 | DQSY (MTFLGL) | O | Digital In U-bit CD format subcode Q sync (SCOR) output to the system controller (IC801)<br>"L" is output every 13.3 msec Almost all, "H" is output |
| 15 | RECP | I | Laser power selection signal input from the system controller (IC801)<br>"L": playback mode, "H": recording mode |
| 16 | XINT | O | Interrupt status output to the system controller (IC801) |
| 17 | TX | I | Recording data output enable signal input from the system controller (IC801)<br>Writing data transmission timing input |
| 18 | VDIO0 | — | Power supply terminal (+2.4V) (for I/O) |
| 19 | OSCI | I | System clock (512Fs=22.5792 MHz) input terminal |
| 20 | OSCO | O | System clock (512Fs=22.5792 MHz) output terminal |
| 21 | VSIO0 | — | Ground terminal (for I/O) |
| 22 to 29 | NC | — | Not used (open) |
| 30 | VSC1 | — | Ground terminal (for internal logic) |
| 31 | XTSL | I | Input terminal for the system clock frequency setting<br>"L": 45.1584 MHz, "H": 22.5792 MHz (fixed at "H" in this set) |
| 32 | XCS_DSP | I | Chip select signal input from the system controller (IC801) |
| 33 | DIN1 | I | Digital audio signal input terminal when recording mode |
| 34 | DOUT | O | Digital audio signal output terminal when playback mode Not used (open) |
| 35 | DT72 | O | Not used (open) |
| 36, 37 | VDC1, VDC2 | — | Power supply terminal (+1.8V) (for internal logic) |
| 38 | DATAI | I | Serial data input terminal Not used (fixed at "L") |
| 39 | LRCKI | I | L/R sampling clock signal (44.1 kHz) input terminal<br>"L": Rch, "H": Lch Not used (fixed at "L") |
| 40 | XBCKI | I | Serial input/output data bit clock signal (2.8224 MHz) input terminal Not used (fixed at "L") |
| 41 | ADDT | I | Recording data signal input from the A/D, D/A converter (IC301) |
| 42 | DADT | O | Playback data signal output to the A/D, D/A converter (IC301) |
| 43 | LRCK | O | L/R sampling clock signal (44.1 kHz) output to the A/D, D/A converter (IC301) |
| 44 | VSC2 | — | Ground terminal (for internal logic) |
| 45 | XBCK | O | Serial input/output data bit clock signal (2.8224 MHz) out put to the A/D, D/A converter (IC301) |

* I (S) stands for schmitt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 46 | FS256 | O | Clock signal (11.2896 MHz) output to the A/D, D/A converter (IC301) (X' tal system) |
| 47 to 52 | A03, A04, A02, A05, A01, A06 | O | Address signal output to the external D-RAM Not used (open) |
| 53 | VDIO1 | — | Power supply terminal (+2.4V) (for I/O) |
| 54 | VSIO1 | — | Ground terminal (for I/O) |
| 55 to 59 | A00, A07, A10. A08, A09 | O | Address signal output to the external D-RAM Not used (open) |
| 60 | $\overline{\text{XRAS}}$ | O | Row address strobe signal output to the external D-RAM "L" active Not used (open) |
| 61 | $\overline{\text{IXOE}}$ | O | Output enable signal output terminal for internal D-RAM "L" active Not used (open) |
| 62 | $\overline{\text{IXWE}}$ | O | Data write enable signal output terminal for internal D-RAM "L" active Not used (open) |
| 63 | $\overline{\text{XCAS}}$ | O | Column address strobe signal output to the external D-RAM "L" active Not used (open) |
| 64 to 67 | D1, D2, D0, D3 | I/O | Two-way data bus with the external D-RAM Not used (open) |
| 68 | VDC3 | — | Power supply terminal (+1.8V) (for internal logic) |
| 69 | VSC3 | — | Ground terminal (for internal logic) |
| 70 | A11 | O | Address signal output to the external D-RAM Not used (open) |
| 71 | $\overline{\text{XOE}}$ | O | Output enable signal output to the external D-RAM "L" active Not used (open) |
| 72 | $\overline{\text{XWE}}$ | O | Data write enable signal output to the external D-RAM "L" active Not used (open) |
| 73 | MVCI | I (S) | Digital in PLL oscillation input from the external VCO Not used (fixed at "L") |
| 74 | ASYO | O (A) | Playback EFM full-swing output terminal |
| 75 | ASYI | I (A) | Playback EFM asymmetry comparator voltage input terminal |
| 76 | AVD1 | — | Power supply terminal (+2.4V) (analog system) |
| 77 | BIAS | I (A) | Playback EFM asymmetry circuit constant current input terminal |
| 78 | RFI | I (A) | Playback EFM RF signal input from the SN761056ADBT (IC501) |
| 79 | AVS1 | — | Ground terminal (analog system) |
| 80 | PCO | O (3) | Phase comparison output for master clock of the recording/playback EFM master PLL |
| 81 | FILI | I (A) | Filter input for master clock of the recording/playback EFM master PLL |
| 82 | FILO | O (A) | Filter output for master clock of the recording/playback EFM master PLL |
| 83 | CLTV | I (A) | Internal VCO control voltage input of the recording/playback EFM master PLL |
| 84 | PEAK | I (A) | Light amount signal (RF/ABCD) peak hold input from the SN761056ADBT (IC501) |
| 85 | BOTM | I (A) | Light amount signal (RF/ABCD) bottom hold input from the SN761056ADBT (IC501) |
| 86 | ABCD | I (A) | Light amount signal (ABCD) input from the SN761056ADBT (IC501) |
| 87 | FE | I (A) | Focus error signal input from the SN761056ADBT (IC501) |
| 88 | AUX1 | I (A) | Auxiliary signal ($I_3$ signal/temperature signal) input terminal Not used (fixed at "H") |
| 89 | VC | I (A) | Middle point voltage (+1.2V) input terminal |
| 90 | ADIO | O (A) | Monitor output of the A/D converter input signal Not used (open) |
| 91 | ADRT | I (A) | A/D converter operational range upper limit voltage input terminal (fixed at "H" in this set) |
| 92 | AVD2 | — | Power supply terminal (+2.4V) (analog system) |
| 93 | AVS2 | — | Ground terminal (analog system) |
| 94 | ADRB | I (A) | A/D converter operational range lower limit voltage input terminal (fixed at "L" in this set) |
| 95 | SE | I (A) | Sled error signal input terminal Not used (fixed at "L") |
| 96 | TE | I (A) | Tracking error signal input from the SN761056ADBT (IC501) |
| 97 | DCHG | I (A) | Connected to the +2.4V power supply |
| 98 | APC | I (A) | Error signal input for the laser automatic power control Not used (fixed at "H") |
| 99 | ADFG | I (A) | ADIP duplex FM signal (22.05 kHz ± 1 kHz) input from the SN761056ADBT (IC501) |
| 100 | VDIO2 | — | Power supply terminal (+2.4V) (for I/O) |
| 101 | VSIO2 | — | Ground terminal (for I/O) |
| 102 | F0CNT | O | Filter f0 control signal output terminal Not used (open) |

* I (S) stands for schmitt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 103 | XLRF | O | Serial latch signal output terminal Not used (open) |
| 104 | CKRF | O | Serial clock signal output terminal Not used (open) |
| 105 | DTRF | O | Writing data output terminal Not used (open) |
| 106 | APCREF | O | Control signal output to the reference voltage generator circuit for the laser automatic power control |
| 107 | LDDR | O | PWM signal output for the laser automatic power control Not used (open) |
| 108 | VDC4 | — | Power supply terminal (+1.8V) (for internal logic) |
| 109 | TRDR | O | Tracking servo drive PWM signal (–) output to the MPC17A56FTA (IC601) |
| 110 | TFDR | O | Tracking servo drive PWM signal (+) output to the MPC17A56FTA (IC601) |
| 111 | FFDR | O | Focus servo drive PWM signal (+) output to the MPC17A56FTA (IC601) |
| 112 | FRDR | O | Focus servo drive PWM signal (–) output to the MPC17A56FTA (IC601) |
| 113 | FS4 | O | Clock signal (176.4 kHz) output to the MPC18A20MTAEL (IC603) (X' tal system) |
| 114 | SRDR | O | Sled servo drive PWM signal (–) output terminal Not used (open) |
| 115 | SFDR | O | Sled servo drive PWM signal (+) output terminal Not used (open) |
| 116 | VSC4 | — | Ground terminal (for internal logic) |
| 117 | SPRD | O | Spindle servo drive PWM signal (–) output terminal Not used (open) |
| 118 | SPFD | O | Spindle servo drive PWM signal (+) output terminal Not used (open) |
| 119 | FGIN | I | FG signal input terminal for spindle servo Not used (open) |
| 120 to 122 | TEST1 to TEST3 | I | Input terminal for the test (normally : fixed at “L”) |
| 123 | EFMO | O | EFM signal output when recording mode to the MPC18A20MTAEL (IC603) |
| 124 | SPVS | O | Spindle servo drive voltage control signal output to the MPC17A56FTA (IC601) |
| 125 | VDIO3 | — | Power supply terminal (+2.4V) (for I/O) |
| 126 | VSIO3 | — | Ground terminal (for I/O) |
| 127 | SPDU | O | Spindle servo (U) drive signal output to the MPC17A56FTA (IC601) |
| 128 | SPDV | O | Spindle servo (V) drive signal output to the MPC17A56FTA (IC601) |
| 129 | SPDW | O | Spindle servo (W) drive signal output to the MPC17A56FTA (IC601) |
| 130 | SPCU | I | Spindle servo (U) timing signal input from the MPC17A56FTA (IC601) |
| 131 | SPCV | I | Spindle servo (V) timing signal input from the MPC17A56FTA (IC601) |
| 132 | SPCW | I | Spindle servo (W) timing signal input from the MPC17A56FTA (IC601) |
| 133 | SLDU | O | Sled servo (1+) drive signal output to the MPC17A56FTA (IC601) |
| 134 | SLDV | O | Sled servo (1–) drive signal output to the MPC17A56FTA (IC601) |
| 135 | SLDW | O | Sled servo (2+) drive signal output to the MPC17A56FTA (IC601) |
| 136 | VDC5 | — | Power supply terminal (+1.8V) (for internal logic) |
| 137 | VSC5 | — | Ground terminal (for internal logic) |
| 138 | SLCU | I | Sled servo (1) timing signal input from the MPC17A56FTA (IC601) |
| 139 | SLCV | I | Sled servo (2) timing signal input from the MPC17A56FTA (IC601) |
| 140 | SLCW | O | Sled servo (2–) timing signal output to the MPC17A56FTA (IC601) |
| 141 | SLVS | O | Sled servo voltage control signal output to the MPC17A56FTA (IC601) |
| 142 | BYPS | O | By-pass transistor control signal output to the MPC17A56FTA (IC601) |
| 143 | VSS | — | Ground terminal (for internal 16M bit D-RAM) |
| 144 | VDD | — | Power supply terminal (+2.4V) (for internal 16M bit D-RAM) |
| 145 | VSS | — | Ground terminal (for internal 16M bit D-RAM) |
| 146 | VDD | — | Power supply terminal (+2.4V) (for internal 16M bit D-RAM) |
| 147 | IVC | O | Output terminal for the test Not used (open) |

• **MAIN BOARD IC801 CXR701080-013GA (MASTER CONTROLLER)**

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 1 | SYNC REC | I | SYNCHRO REC switch (S801) input terminal "L": off, "H": on |
| 2 | OFTRK | I | Off track signal input from the CXD2660GA (IC502) |
| 3 | PROTECT | I | Rec-proof claw detect input from the protect detect switch (S806)<br>"L": recording possible , "H": protect |
| 4 | PAUSE KEY | I | Set pause key input terminal |
| 5 | TX | O | Recording data output enable signal output to the CXD2660GA (IC502)<br>Writing data transmission timing output |
| 6 | SENSE | I | Internal status (SENSE) input from the CXD2660GA (IC502) |
| 7 | WRPWR | O | Laser power select signal output to the CXD2660GA (IC502)<br>"L": playback mode , "H": recording mode |
| 8 | XLAT | O | Serial data latch pulse output to the CXD2660GA (IC502) |
| 9 | XCS DSP | O | Chip select signal output to the CXD2660GA (IC502) |
| 10 | CS RTC | O | Chip select signal output to the real time clock (IC804) |
| 11 | SI0 | I | Serial data input from the A/D, D/A converter (IC301), CXD2660GA (IC502), EEPROM (IC802), real time clock (IC804) and switch & liquid crystal display module unit |
| 12 | SO0 | O | Serial data output to the A/D, D/A converter (IC301), CXD2660GA (IC502), EEPROM (IC802), real time clock (IC804) and switch & liquid crystal display module unit |
| 13 | SCK0 | O | Serial clock signal output to the A/D, D/A converter (IC301), CXD2660GA (IC502), EEPROM (IC802), real time clock (IC804) and switch & liquid crystal display module unit |
| 14 | XGUM ON | I | Rechargeable battery pack detection switch (S901) input terminal<br>"L": rechargeable battery pack in |
| 15 | VSS | — | Ground terminal |
| 16 | VDD | — | Power supply terminal (+2.4V) |
| 17 | XOUT | O | Not used (open) |
| 18 | BEEP | O | Beep sound control signal input terminal |
| 19 | RMC DTCK | I/O | TSB serial communication data input/output terminal for remote commander with headphone |
| 20 | XCS LCD | O | Chip select signal output to the liquid crystal display |
| 21 | LCD STB | O | Strobe signal output to the liquid crystal display |
| 22 | $\overline{\text{LCD RST}}$ | O | Reset control signal output to the liquid crystal display |
| 23 | XHP STBY | O | Standby on/off control signal output to the line/headphone amplifier (IC303)<br>"L": standby mode, "H": amplifier on |
| 24 | CLV U | O | Spindle servo (U) drive signal output to the MPC17A56FTAF (IC601) |
| 25 | CLV V | O | Spindle servo (V) drive signal output to the MPC17A56FTAF (IC601) |
| 26 | CLV W | O | Spindle servo (W) drive signal output to the MPC17A56FTAF (IC601) |
| 27 | MODE1 | O | Power supply control signal output for over write head drive to the MPC18A20MTAEL (IC603) |
| 28 | MODE2 | O | Power supply control signal output for over write head drive to the MPC18A20MTAEL (IC603) |
| 29 | MODE3 | O | Power supply control signal output terminal for over write head drive |
| 30 | HD CON 1 | O | Over write head control signal output to the MPC17A17DTB (IC602) |
| 31 | HD CON 2 | O | Over write head control signal output to the MPC17A17DTB (IC602) |
| 32 | XREC MODE | O | Not used (open) |
| 33 | LD ON | O | Laser diode on/off control signal output terminal "L": laser off, "H": laser on Not used (open) |
| 34 | TSB SLV ON | I | TSB slave detect signal input terminal |
| 35 | SLD MON 1 | I | Sled servo timing signal input from the MPC17A56FTA (IC601) |
| 36 | PD S0 | O | PD IC mode switching signal output to the optical pick-up block |
| 37 | REG CTL CLK | O | Synchronizing external clock signal output terminal Not used (open) |
| 38 | PD S1 | O | PD IC mode switching signal output to the optical pick-up block |

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 39 | FFCLR | O | Input latch output for starting signal to the MPC18A31FTA (IC901) |
| 40 | SLEEP | O | System sleep control signal output to the MPC18A31FTA (IC901) "H": sleep on |
| 41 | TSB EDGE | I | TSB slave edge detect signal input terminal |
| 42 | GND SW | O | Ground line switching signal output terminal |
| 43 | $\overline{\text{XRST}}$ | I | System reset signal input from the MPC18A31FTA (IC901) "L": reset<br>For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H" |
| 44 | VSS | — | Ground terminal |
| 45 | XTAL | O | Main system clock output terminal (16.9344 MHz) |
| 46 | EXTAL | I | Main system clock input terminal (16.9344 MHz) |
| 47 | VDD | — | Power supply terminal (+2.4V) |
| 48 | TSB SLV CTL | I/O | Two-way control signal bus with TSB slave circuit |
| 49 | SPDL START SW | O | Spindle servo start switching signal output to the analog switch (IC504, 505) |
| 50 | OPEN CLOSE SW | I | Upper panel open/close detect switch (S801) input terminal (A/D input)<br>"L": upper panel close, "H": upper panel open |
| 51 | XSHOCK | I | Recording shock detect signal input from the CXD2660GA (IC502) |
| 52 | FOK | I | Focus OK signal input from the CXD2660GA (IC502) "H": is input when focus is on ("L": NG) |
| 53 | SQSY | I | Subcode Q sync (SCOR) input from the CXD2660GA (IC502)<br>"L" is input every 13.3 msec Almost all, "H" is input |
| 54 | DQSY | I | Digital In U-bit CD format subcode Q sync (SCOR) input from the CXD2660GA (IC502)<br>"L" is input every 13.3 msec Almost all, "H" is input |
| 55 | XINT | I | Interrupt status input from the CXD2660GA (IC502) |
| 56 | T.MARK | I | T MARK switch (S803) input terminal |
| 57 | REC WBL SW | O | Stable control signal is output when recording |
| 58 | SERON | O | Series power supply control signal output to the MPC18A31FTA (IC901) |
| 59 | XCHG | O | Charge control signal output to the MPC18A31FTA (IC901) |
| 60 | XTEST | I | Setting terminal for the test mode "L": test mode, normally: fixed at "H" |
| 61 | SET CODE0 | I | Destination setting terminal Fixed at "L" in this set |
| 62 | SET CODE1 | I | Destination setting terminal Fixed at "L" in this set (US, canadian model: Not used (open)) |
| 63 | SET CODE2 | I | Destination setting terminal Fixed at "L" in this set (US, canadian model: Not used (open)) |
| 64 | REG CTL PWM | O | Synchronizing external clock signal output to the MPC18A31FTA (IC901) |
| 65 | VRM PWM | O | VREM power supply voltage control PWM signal output to the MPC18A31FTA (IC901) |
| 66 | VC PWM | O | System power supply voltage control PWM signal output to the MPC18A31FTA (IC901) |
| 67 | SPDL PWM | O | Spindle servo drive voltage control PWM signal output to the MPC17A56FTA (IC601) |
| 68 | $\overline{\text{XIC RST}}$ | O | Reset signal output to the A/D, D/A converter (IC301), SN761056ADBT (IC501) and CXD2660GA (IC502) "L": reset |
| 69 | REC LED | O | REC LED drive signal output terminal "H": LED on |
| 70 | SI1 | I | Joint text data input from the remote commander with headphone |
| 71 | SO1 | O | Joint text data output to the remote commander with headphone |
| 72 | SCK1 | O | Joint data communication clock output to the remote commander with headphone |
| 73 | XHOLD SW | I | HOLD switch (S804) input terminal "L": hold on, "H": hold off |
| 74 | VDD | — | Power supply terminal (+2.4V) |
| 75 | TEX | I | Sub system clock input terminal Not used (open) |
| 76 | TX | O | Sub system clock output terminal Not used (open) |
| 77 | VSS | — | Ground terminal |
| 78 | VBKAN | I | Sub power supply input terminal |
| 79 | S MON | I | Servo signal monitor input from the SN761056ADBT (IC501) (A/D input) |

| Pin No. | Pin Name | I/O | Description |
|---|---|---|---|
| 80 | VB MON | I | Un-regulator power supply voltage monitor input terminal (A/D input) |
| 81 | CHG MON | I | Rechargeable battery voltage monitor input from the MPC18A31FTA (IC901) (A/D input) |
| 82 | VREF MON | I | Reference voltage monitor input from the SN761056ADBT (IC501) (A/D input) |
| 83 | WK DET | I | Set key starting detect signal input terminal (A/D input) |
| 84 | HALF LOCK SW | I | Open knob detect switch (S802) input terminal "L": normal position, "H": open knob slid |
| 85 | RMC KEY | I | Remote commander with headphone key input terminal (A/D input) |
| 86 | SET KEY 1 | I | Set key input terminal (A/D input) (■, ▶▶I, I◀◀,VOL +/– keys input) |
| 87 | SET KEY 2 | I | Set key input terminal (A/D input) (▶, jog, END SEARCH keys input) |
| 88 | REC KEY | I | REC key input terminal |
| 89 | VRM MON | I | VREM voltage monitor input terminal (A/D input) |
| 90 | HIDC MON | I | HI-DC voltage monitor input terminal (A/D input) |
| 91 | AD GND | — | Ground terminal (for A/D converter) |
| 92 | AVREF | I | Input terminal for power supply voltage adjustment reference voltage (+2.4V) (for A/D converter) |
| 93 | AVDD | — | Power supply terminal (+2.4V) (for A/D converter) |
| 94 | TEST0 | I | Input terminal for the test (normally: fixed at "L") |
| 95 | TEST1 | I | Input terminal for the test (normally: fixed at "L") |
| 96 | TDI | I | Input terminal for JTAG Not used (open) |
| 97 | TMS | I | Input terminal for JTAG Not used (open) |
| 98 | TCK | I | Input terminal for JTAG Not used (open) |
| 99 | TRST | I | Input terminal for JTAG Not used (open) |
| 100 | TDO | O | Output terminal for JTAG Not used (open) |
| 101 | TSB CLKCTL | O | TSB clock control signal output terminal |
| 102 | SSB DATA | I/O | Two-way SSB serial data bus with the SN761056ADBT (IC501) |
| 103 | SSB CLK | O | SSB serial clock signal output to the SN761056ADBT (IC501) |
| 104 | FLASH WR EN | — | Not used (fixed at "H") |
| 105 | VDD | — | Power supply terminal (+2.4V) |
| 106 | VSS | — | Ground terminal |
| 107 to 109 | VLC1 to VLC3 | — | Power supply terminal for the liquid crystal display (+2.4V) |
| 110 | XCS ADA | O | Chip select signal output to the A/D, D/A converter (IC301) |
| 111 | XPD ADA | O | Power supply control signal output to the A/D, D/A converter (IC301) |
| 112 | $\overline{\text{XRST MTR DRV}}$ | O | Reset signal output terminal "L": reset Not used (open) |
| 113 | OPT DET | I | DIN plug detect signal input terminal |
| 114 | XJACK DET | I | LINE IN plug detect signal input terminal |
| 115 | XMIC DET | I | MIC plug detect signal input terminal |
| 116 | XOPT CONT | O | Power supply control signal output to the DIN plug laser diode |
| 117 | MUTE | O | Analog muting on/off control signal output terminal "L": muting off, "H": muting on |
| 118 | XHP STBY TMP | O | Power supply control signal output to the headphone amplifier Not used (open) |
| 119 | XCS NV | O | Chip select signal output to the EEPROM (IC802) |
| 120 | XINT REC SW | O | Not used (open) |

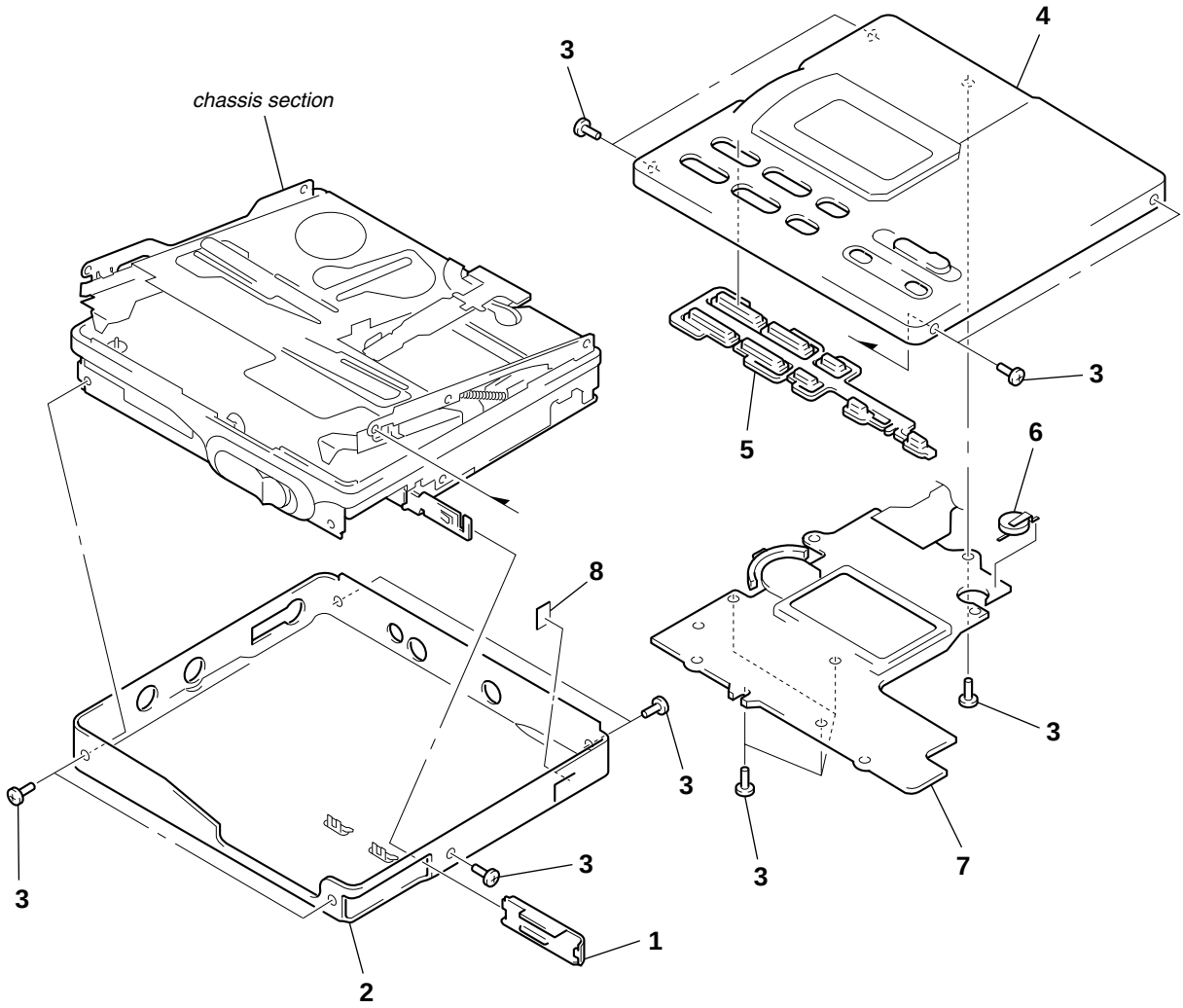
# SECTION 7
# EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Abbreviation
  AUS : Australian model
  CH : Chinese model
  CND : Canadian model
  FR : French model
  HK : Hong Kong model
  JEW : Tourist model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

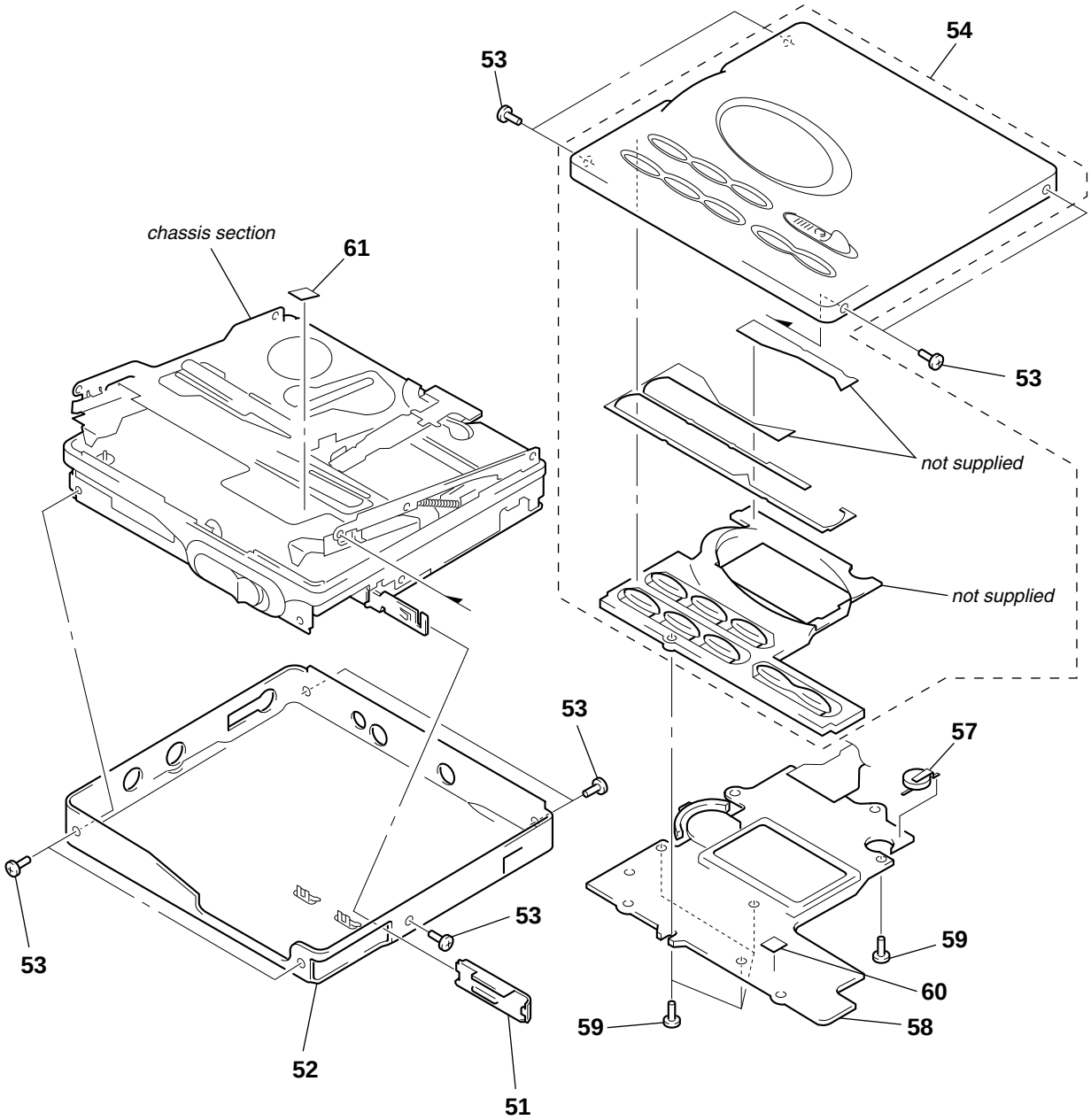
Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

## (1) PANEL SECTION (MZ-R90)



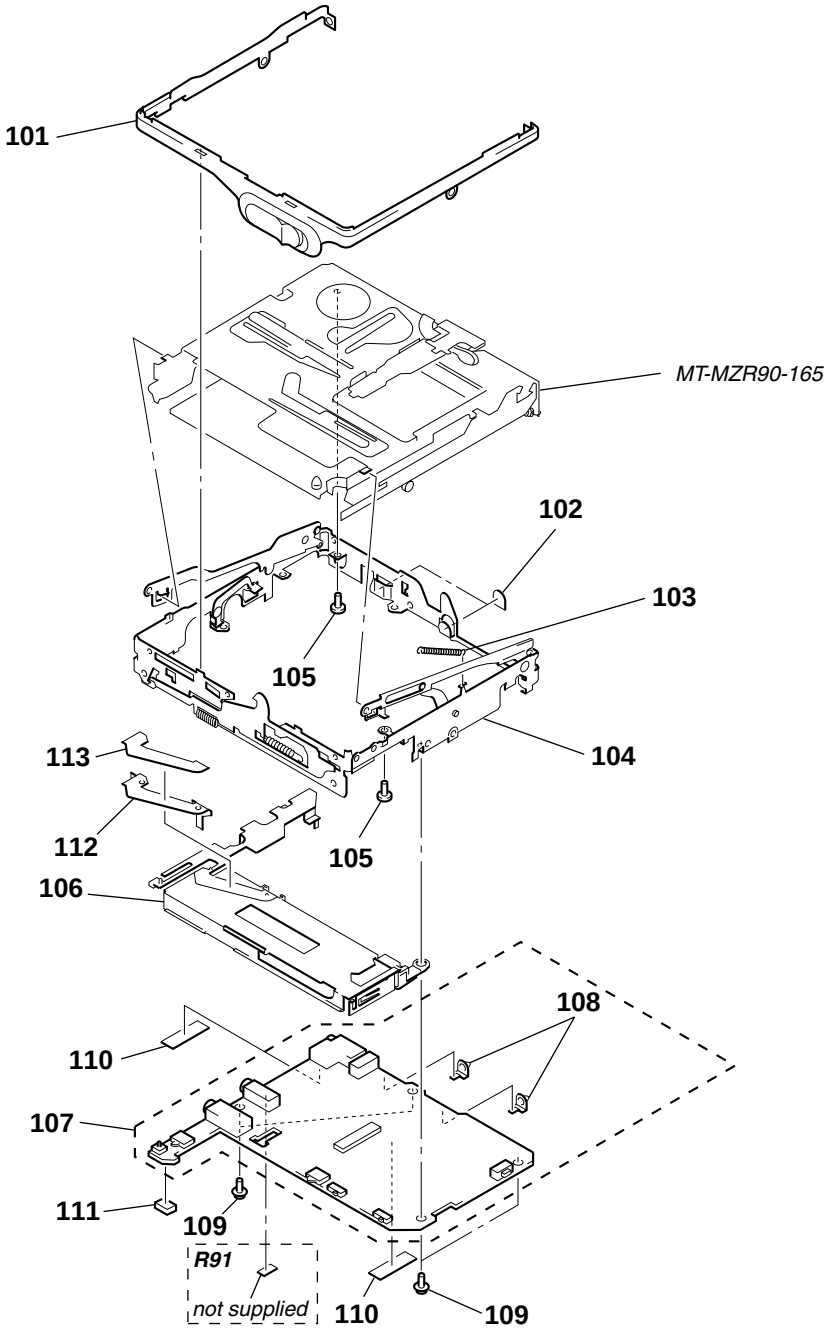

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | 4-223-077-01 | LID, BATTERY CASE (SILVER) | |
| 1 | 4-223-077-11 | LID, BATTERY CASE (BLACK) (HK, CH, JEW) | |
| 1 | 4-223-077-51 | LID, BATTERY CASE (BLUE) (US) | |
| 2 | X-3378-689-1 | PANEL (R90L) ASSY, BOTTOM (BLUE) (US) | |
| 2 | X-4952-045-1 | PANEL (S) ASSY, BOTTOM (SILVER) | |
| 2 | X-4952-048-1 | PANEL (B) ASSY, BOTTOM (BLACK) (HK, CH, JEW) | |
| 3 | 4-218-229-09 | SCREW (1.4), MI (SILVER) | |
| 3 | 4-218-229-11 | SCREW (1.4), MI (BLACK) (HK, CH, JEW) | |
| 3 | 4-218-229-13 | SCREW (1.4), MI (BLACK) (CND) | |
| 4 | X-3378-556-1 | SERVICE ASSY, UPPER PANEL (S) (SILVER) | |
| 4 | X-3378-557-1 | SERVICE ASSY, UPPER PANEL (B) (BLACK) | |
| 4 | X-3378-989-1 | SERVICE ASSY, UPPER PANEL (L) (BLUE) | |
| 5 | 4-223-103-01 | BUTTON, CONTROL (SILVER) | |
| 5 | 4-223-103-11 | BUTTON, CONTROL (BLACK) (HK, CH, JEW) | |
| 6 | 1-756-028-11 | BATTERY | |
| 7 | 1-803-759-11 | LCD MODULE | |
| 8 | 3-044-057-01 | SHEET (BATTERY CASE) | |

## (2) PANEL SECTION (MZ-R91)



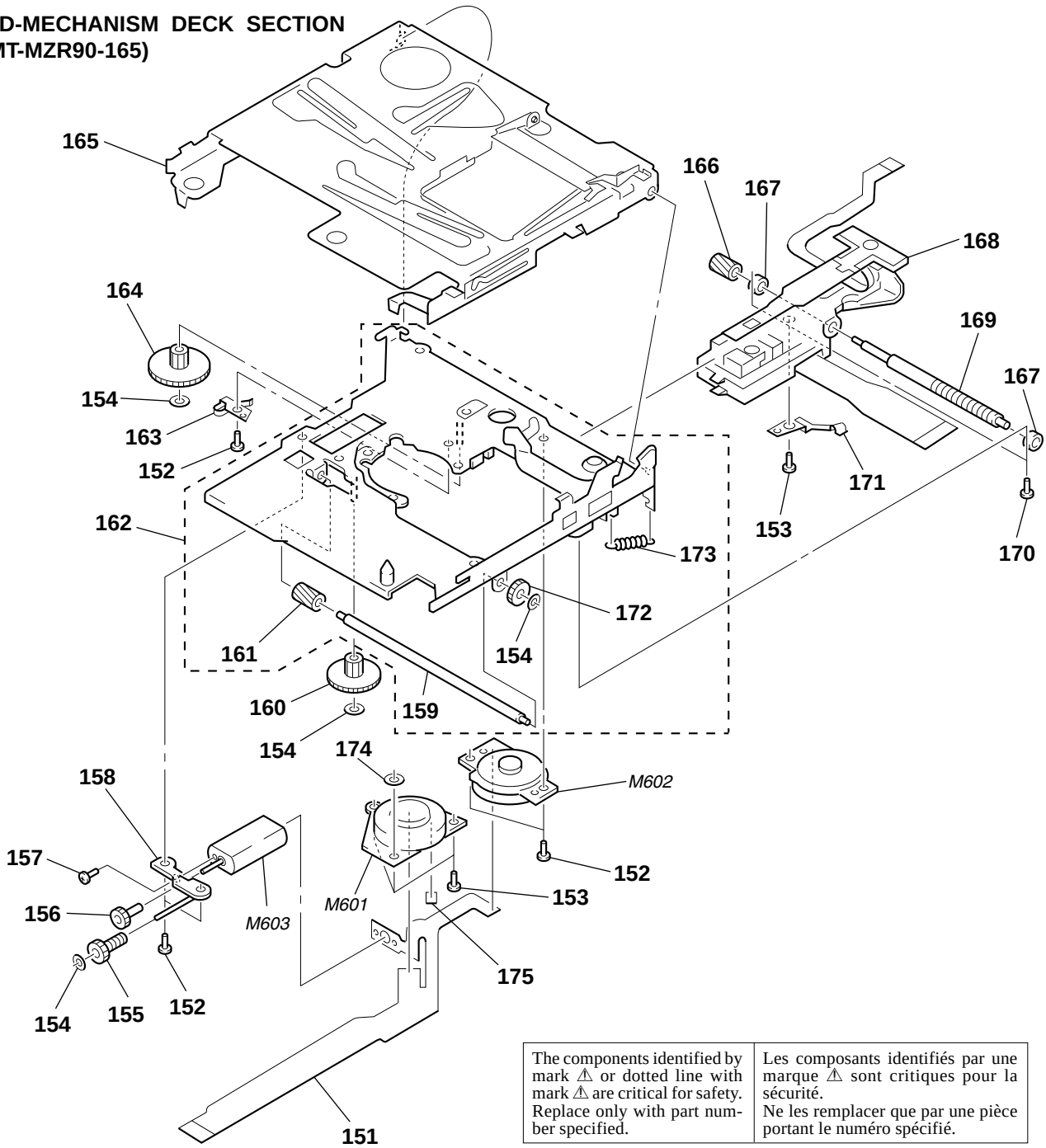

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | 4-223-077-21 | LID, BATTERY CASE (BLUE) | |
| 51 | 4-223-077-31 | LID, BATTERY CASE (RED) | |
| 51 | 4-223-077-41 | LID, BATTERY CASE (WHITE) | |
| 52 | X-4952-184-1 | PANEL (L) ASSY, BOTTOM (BLUE) | |
| 52 | X-4952-186-1 | PANEL (R) ASSY, BOTTOM (RED) | |
| 52 | X-4952-188-1 | PANEL (W) ASSY, BOTTOM (WHITE) | |
| 53 | 4-218-229-09 | SCREW (1.4), MI | |
| 54 | X-3378-553-1 | SERVICE ASSY, UPPER PANEL (L) (BLUE) | |
| 54 | X-3378-554-1 | SERVICE ASSY, UPPER PANEL (R) (RED) | |
| 54 | X-3378-555-1 | SERVICE ASSY, UPPER PANEL (W) (WHITE) | |
| 57 | 1-756-028-11 | BATTERY | |
| 58 | 1-803-759-11 | LCD MODULE | |
| 59 | 4-984-017-01 | SCREW (1.7), TAPPING | |
| 60 | 3-044-057-01 | SHEET (BATTERY CASE) | |

## (3) CHASSIS SECTION




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | X-4952-044-1 | BELT ASSY (S), ORNAMENTAL (SILVER) | (R90/R91) |
| 101 | X-4952-337-1 | BELT (B) ASSY, ORNAMENTAL (BLACK) | (R90: BLACK) |
| 102 | 4-223-076-01 | SHEET (TERMINAL), INSULATING | |
| 103 | 4-223-083-01 | SPRING (ARM), TENSION | |
| 104 | X-4952-042-1 | CHASSIS ASSY, SET | |
| 105 | 4-218-233-05 | SCREW (1.4), MI | |
| 106 | X-4952-043-1 | CASE ASSY, BATTERY | |
| 107 | A-3323-361-A | MAIN BOARD, COMPLETE | (R90: AEP, UK, E, AUS, CH/R91: AEP, UK) |
| 107 | A-3323-374-A | MAIN BOARD, COMPLETE (R90: FR/R91: FR) | |
| 107 | A-3323-491-A | MAIN BOARD, COMPLETE | (R90: HK, JEW/R91: HK, JEW) |
| 107 | A-3323-493-A | MAIN BOARD, COMPLETE (R90: US, CND) | |
| 108 | 4-223-110-01 | TERMINAL (3) | |
| 109 | 3-335-797-91 | SCREW (M1.4), TOOTHED LOCK | |
| 110 | 3-042-741-01 | SHEET (FLEXIBLE) (R90/R91: HK, JEW) | |
| 111 | 3-044-312-01 | SHEET (PC BOARD) (2) | |
| 112 | 3-043-283-01 | JOINT (R90: US, E, AUS, CH/ | R91: EXCEPT HK, JEW) |
| 112 | 3-043-283-02 | JOINT (R90: EXCEPT US, E, AUS CH/ | R91: HK, JEW) |
| 113 | 3-043-530-01 | SHEET (JOINT), INSULATING | (R90: EXCEPT CA/R91) |

## (4) MD-MECHANISM DECK SECTION (MT-MZR90-165)




| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |
|---|---|

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | 1-675-466-11 | MOTOR FLEXIBLE BOARD | |
| 152 | 4-963-883-42 | SCREW (M1.4), PRECISION PAN | |
| 153 | 4-963-883-31 | SCREW (M1.4), PRECISION PAN | |
| 154 | 3-338-645-31 | WASHER (0.8-2.5) | |
| 155 | 4-222-214-11 | GEAR (HB) | |
| 156 | 4-222-217-01 | GEAR (HA) | |
| 157 | 4-224-885-01 | SCREW (M1.2X1.5) | |
| 158 | X-4951-918-1 | CHASSIS ASSY, GEAR | |
| 159 | 4-222-223-01 | SHAFT, SUB | |
| 160 | 4-222-215-01 | GEAR (HC) | |
| 161 | 4-222-218-01 | GEAR (HD) | |
| 162 | X-4951-920-1 | CHASSIS ASSY | |
| 163 | 4-222-206-01 | SPRING, THRUST | |
| 164 | 4-222-216-01 | GEAR (SA) | |
| 165 | X-4951-919-1 | HOLDER ASSY | |
| 166 | 4-222-208-01 | GEAR (SB) | |
| 167 | 4-222-204-01 | BEARING | |
| ⚠168 | X-4952-386-1 | SERVICE ASSY, OP | |
| 169 | 4-222-203-01 | SCREW, LEAD | |
| 170 | 3-349-825-21 | SCREW | |
| 171 | 4-222-205-01 | SPRING, RACK | |
| 172 | 4-222-222-01 | GEAR (RACK) | |
| 173 | 4-222-226-01 | SPRING (EJECT), TENSION | |
| 174 | 4-997-677-11 | WASHER | |
| 175 | 3-043-428-01 | SHEET (CLV) | |
| M601 | 8-835-666-01 | MOTOR, DC SSM-01C14A (SPINDLE) (WITH TURN TABLE) | |
| M602 | 1-763-399-11 | MOTOR, DC (SLED) (WITH GEAR) | |
| M603 | 1-763-400-11 | MOTOR, DC (OVER WRITE HEAD UP/DOWN) | |

# SECTION 8
# ELECTRICAL PARTS LIST

**MAIN**

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Abbreviation
  AUS : Australian model
  CH : Chinese model
  CND : Canadian model
  FR : French model
  HK : Hong Kong model
  JEW : Tourist model
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. .  uPA. . : µPA. .
  uPB. . : µPB. .  uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | A-3323-361-A | MAIN BOARD, COMPLETE (R90: AEP, UK, E, AUS, CH/R91: AEP, UK) | | | |
| | A-3323-374-A | MAIN BOARD, COMPLETE (R90: FR/R91: FR) | | | |
| | A-3323-491-A | MAIN BOARD, COMPLETE (R90: HK, JEW/R91: HK, JEW) | | | |
| | A-3323-493-A | MAIN BOARD, COMPLETE (R90: US, CND) | | | |
| | | ********** | | | |
| | 4-223-110-01 | TERMINAL (3) | | | |
| | | < CAPACITOR > | | | |
| C101 | 1-125-984-21 | TANTALUM CHIP | 22uF | 20% | 4V |
| C102 | 1-107-820-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C103 | 1-131-734-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C104 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C105 | 1-117-863-11 | CERAMIC CHIP | 0.47uF | 10% | 6.3V |
| C106 | 1-131-727-91 | TANTALUM CHIP | 470uF | 20% | 2.5V |
| C107 | 1-115-467-11 | CERAMIC CHIP | 0.22uF | 10% | 10V (EXCEPT R90: FR/R91: FR) |
| C107 | 1-165-176-11 | CERAMIC CHIP | 0.047uF | | 16V (R90: FR/R91: FR) |
| C108 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C109 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C110 | 1-135-337-11 | TANTALUM CHIP | 1uF | 20% | 6.3V |
| C111 | 1-164-874-11 | CERAMIC CHIP | 100PF | 5% | 16V |
| C112 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C113 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C114 | 1-164-878-11 | CERAMIC CHIP | 150PF | 5% | 16V |
| C116 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C117 | 1-125-985-91 | CERAMIC CHIP | 0.47uF | 10% | 25V |
| C118 | 1-164-939-11 | CERAMIC CHIP | 0.0022uF | 10% | 16V |
| C120 | 1-164-940-11 | CERAMIC CHIP | 0.0033uF | 10% | 16V |
| C122 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C201 | 1-125-984-21 | TANTALUM CHIP | 22uF | 20% | 4V |
| C202 | 1-107-820-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C203 | 1-131-734-21 | TANTALUM CHIP | 4.7uF | 20% | 6.3V |
| C204 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C205 | 1-117-863-11 | CERAMIC CHIP | 0.47uF | 10% | 6.3V |
| C206 | 1-131-727-91 | TANTALUM CHIP | 470uF | 20% | 2.5V |
| C207 | 1-115-467-11 | CERAMIC CHIP | 0.22uF | 10% | 10V (EXCEPT R90: FR/R91: FR) |
| C207 | 1-165-176-11 | CERAMIC CHIP | 0.047uF | | 16V (R90: FR/R91: FR) |
| C208 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C209 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C210 | 1-135-337-11 | TANTALUM CHIP | 1uF | 20% | 6.3V |
| C211 | 1-164-874-11 | CERAMIC CHIP | 100PF | 5% | 16V |
| C212 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C213 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C214 | 1-164-878-11 | CERAMIC CHIP | 150PF | 5% | 16V |
| C216 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C217 | 1-125-985-91 | CERAMIC CHIP | 0.47uF | 10% | 25V |
| C218 | 1-164-939-11 | CERAMIC CHIP | 0.0022uF | 10% | 16V |
| C220 | 1-164-940-11 | CERAMIC CHIP | 0.0033uF | 10% | 16V |
| C222 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C301 | 1-107-820-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C302 | 1-127-895-11 | TANTALUM CHIP | 22uF | 20% | 4V |
| C303 | 1-107-820-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C304 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C305 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C306 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C307 | 1-131-862-91 | TANTALUM CHIP | 47uF | 20% | 4V |
| C308 | 1-107-820-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C309 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C310 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C311 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C312 | 1-164-949-11 | CERAMIC CHIP | 0.047uF | | 16V |
| C313 | 1-164-941-11 | CERAMIC CHIP | 0.0047uF | 10% | 16V |
| C314 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C315 | 1-131-725-91 | TANTALUM CHIP | 47uF | 20% | 4V |
| C316 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C317 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C318 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C319 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C320 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C321 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C322 | 1-131-862-91 | TANTALUM CHIP | 47uF | 20% | 4V |
| C323 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C324 | 1-127-895-11 | TANTALUM CHIP | 22uF | 20% | 4V |
| C327 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C328 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V (R90: US, CND) |
| C329 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V (R90: US, CND) |
| C330 | 1-107-820-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C331 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C332 | 1-127-895-11 | TANTALUM CHIP | 22uF | 20% | 4V |
| C501 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |

## MAIN

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C502 | 1-127-772-81 | CERAMIC CHIP | 33000PF | 10% | 10V |
| C503 | 1-164-940-11 | CERAMIC CHIP | 0.0033uF | 10% | 16V |
| C504 | 1-164-940-11 | CERAMIC CHIP | 0.0033uF | 10% | 16V |
| C505 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C506 | 1-127-772-81 | CERAMIC CHIP | 33000PF | 10% | 10V |
| C507 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C508 | 1-164-858-11 | CERAMIC CHIP | 22PF | 5% | 16V |
| C509 | 1-164-940-11 | CERAMIC CHIP | 0.0033uF | 10% | 16V |
| C510 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C511 | 1-164-845-11 | CERAMIC CHIP | 5PF | 0.25PF | 16V |
| C512 | 1-164-938-11 | CERAMIC CHIP | 0.0015uF | 10% | 16V |
| C513 | 1-127-772-81 | CERAMIC CHIP | 33000PF | 10% | 10V |
| C514 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C515 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C516 | 1-164-845-11 | CERAMIC CHIP | 5PF | 0.25PF | 16V |
| C517 | 1-164-940-11 | CERAMIC CHIP | 0.0033uF | 10% | 16V |
| C519 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C520 | 1-107-819-11 | CERAMIC CHIP | 0.022uF | 10% | 16V |
| C521 | 1-119-923-81 | CERAMIC CHIP | 0.047uF | 10% | 10V |
| C522 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C524 | 1-131-725-91 | TANTALUM CHIP | 47uF | 20% | 4V |
| C525 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C526 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C527 | 1-164-850-11 | CERAMIC CHIP | 10PF | 0.50PF | 16V |
| C528 | 1-164-850-11 | CERAMIC CHIP | 10PF | 0.50PF | 16V |
| C529 | 1-127-895-11 | TANTALUM CHIP | 22uF | 20% | 4V |
| C530 | 1-131-725-91 | TANTALUM CHIP | 47uF | 20% | 4V |
| C531 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C532 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C533 | 1-164-245-11 | CERAMIC CHIP | 0.015uF | 10% | 25V |
| C534 | 1-117-863-11 | CERAMIC CHIP | 0.47uF | 10% | 6.3V |
| C535 | 1-164-935-11 | CERAMIC CHIP | 470PF | 10% | 16V |
| C536 | 1-117-863-11 | CERAMIC CHIP | 0.47uF | 10% | 6.3V |
| C537 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C600 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C601 | 1-131-623-91 | TANTALUM CHIP | 15uF | 20% | 4V |
| C602 | 1-109-813-11 | CAP, CHIP | 100PF | 5% | 100V |
| C603 | 1-135-337-11 | TANTALUM CHIP | 1uF | 20% | 6.3V |
| C604 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C605 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C606 | 1-127-895-11 | TANTALUM CHIP | 22uF | 20% | 4V |
| C607 | 1-107-820-11 | CERAMIC CHIP | 0.1uF | | 16V |
| C608 | 1-107-819-11 | CERAMIC CHIP | 0.022uF | 10% | 16V |
| C609 | 1-119-923-81 | CERAMIC CHIP | 0.047uF | 10% | 10V |
| C610 | 1-164-935-11 | CERAMIC CHIP | 470PF | 10% | 16V |
| C611 | 1-119-923-81 | CERAMIC CHIP | 0.047uF | 10% | 10V |
| C612 | 1-164-940-11 | CERAMIC CHIP | 0.0033uF | 10% | 16V |
| C613 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C614 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C615 | 1-135-379-91 | TANTALUM CHIP | 3.3uF | 20% | 10V |
| C617 | 1-127-772-81 | CERAMIC CHIP | 33000PF | 10% | 10V |
| C618 | 1-127-772-81 | CERAMIC CHIP | 33000PF | 10% | 10V |
| C619 | 1-127-772-81 | CERAMIC CHIP | 33000PF | 10% | 10V |
| C620 | 1-131-621-91 | TANTALUM CHIP | 6.8uF | 20% | 6.3V |
| C621 | 1-127-578-91 | TANTALUM CHIP | 3.3uF | 20% | 6.3V |
| C622 | 1-131-621-91 | TANTALUM CHIP | 6.8uF | 20% | 6.3V |
| C623 | 1-127-578-91 | TANTALUM CHIP | 3.3uF | 20% | 6.3V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C624 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C625 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C626 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C627 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C628 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C629 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C630 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C631 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C632 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C633 | 1-162-970-11 | CERAMIC CHIP | 0.01uF | 10% | 25V |
| C634 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C635 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C636 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C637 | 1-131-726-91 | TANTALUM CHIP | 33uF | 20% | 6.3V |
| C638 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C801 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C803 | 1-164-941-11 | CERAMIC CHIP | 0.0047uF | 10% | 16V |
| C804 | 1-164-858-11 | CERAMIC CHIP | 22PF | 5% | 16V |
| C806 | 1-127-895-11 | TANTALUM CHIP | 22uF | 20% | 4V |
| C807 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C808 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C809 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C810 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C811 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C899 | 1-164-217-11 | CERAMIC CHIP | 150PF | 5% | 50V (EXCEPT R90: US, CND) |
| C901 | 1-164-941-11 | CERAMIC CHIP | 0.0047uF | 10% | 16V |
| C902 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C903 | 1-128-964-91 | TANTALUM CHIP | 100uF | 20% | 6.3V |
| C904 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C905 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C906 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C907 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C908 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C910 | 1-107-819-11 | CERAMIC CHIP | 0.022uF | 10% | 16V |
| C911 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C913 | 1-117-919-11 | TANTALUM CHIP | 10uF | 20% | 6.3V |
| C914 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C915 | 1-125-840-91 | TANTALUM | 10uF | 20% | 6.3V |
| C916 | 1-131-725-91 | TANTALUM CHIP | 47uF | 20% | 4V |
| C917 | 1-128-964-91 | TANTALUM CHIP | 100uF | 20% | 6.3V |
| C918 | 1-107-819-11 | CERAMIC CHIP | 0.022uF | 10% | 16V |
| C919 | 1-109-982-11 | CERAMIC CHIP | 1uF | 10% | 10V |
| C920 | 1-125-837-11 | CERAMIC CHIP | 1uF | 10% | 6.3V |
| C921 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C922 | 1-125-777-11 | CERAMIC CHIP | 0.1uF | 10% | 10V |
| C923 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C925 | 1-164-943-11 | CERAMIC CHIP | 0.01uF | 10% | 16V |
| C926 | 1-119-923-81 | CERAMIC CHIP | 0.047uF | 10% | 10V |
| C927 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C928 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C929 | 1-119-923-81 | CERAMIC CHIP | 0.047uF | 10% | 10V |
| C930 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C931 | 1-164-937-11 | CERAMIC CHIP | 0.001uF | 10% | 16V |
| C932 | 1-109-982-11 | CERAMIC CHIP | 1uF | 10% | 10V |
| C1001 | 1-125-840-91 | TANTALUM | 10uF | 20% | 6.3V |
| C1002 | 1-127-772-81 | CERAMIC CHIP | 33000PF | 10% | 10V |
| C1003 | 1-127-772-81 | CERAMIC CHIP | 33000PF | 10% | 10V |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C1004 | 1-164-939-11 | CERAMIC CHIP 0.0022uF 10% | 16V |
| | | < CONNECTOR > | |
| * CN501 | 1-778-168-11 | CONNECTOR, FFC/FPC (ZIF) 20P | |
| * CN601 | 1-793-510-21 | CONNECTOR, FPC (ZIF) 5P | |
| * CN602 | 1-793-511-21 | CONNECTOR, FPC (ZIF) 15P | |
| * CN801 | 1-793-511-21 | CONNECTOR, FPC (ZIF) 15P | |
| | | < DIODE > | |
| D301 | 8-719-077-43 | DIODE MAZZ068H01S0 | |
| D302 | 8-719-077-43 | DIODE MAZZ068H01S0 | |
| D303 | 8-719-056-54 | DIODE MAZS068008S0 | |
| D304 | 8-719-017-58 | DIODE MA8068-TX | |
| D501 | 8-719-421-27 | DIODE MA728-TX | |
| D600 | 8-719-072-10 | DIODE FS05J10-TP | |
| D601 | 8-719-072-10 | DIODE FS05J10-TP | |
| D602 | 8-719-421-27 | DIODE MA728-TX | |
| D603 | 8-719-067-36 | DIODE MA3ZD1200LS0 | |
| D801 | 8-719-421-27 | DIODE MA728-TX | |
| D802 | 8-719-988-61 | DIODE 1SS355TE-17 | |
| D803 | 8-719-420-51 | DIODE MA729-TX | |
| D804 | 8-719-069-29 | DIODE RB520S-30TE61 | |
| D901 | 8-719-420-51 | DIODE MA729-TX | |
| D902 | 8-719-072-26 | DIODE FS1J3-TP | |
| D903 | 8-719-072-26 | DIODE FS1J3-TP | |
| D905 | 8-719-074-74 | DIODE MA3XD15001S0 | |
| D906 | 8-719-074-74 | DIODE MA3XD15001S0 | |
| D907 | 8-719-072-26 | DIODE FS1J3-TP | |
| | | < FERRITE BEAD/RESISTOR > | |
| FB301 | 1-500-329-21 | FERRITE BEAD INDUCTOR | |
| FB302 | 1-500-329-21 | FERRITE BEAD INDUCTOR | |
| FB303 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| | | | (EXCEPT R90: US, CND) |
| FB303 | 1-414-228-11 | FERRITE BEAD INDUCTOR (R90: US, CND) | |
| FB304 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| FB305 | 1-500-329-21 | FERRITE BEAD INDUCTOR | |
| FB306 | 1-500-329-21 | FERRITE BEAD INDUCTOR | |
| FB501 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| FB502 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| FB503 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| | | | (EXCEPT R90: US, CND) |
| FB503 | 1-414-760-21 | FERRITE, EMI (SMD) (R90: US, CND) | |
| FB504 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| | | | (EXCEPT R90: US, CND) |
| FB504 | 1-414-229-11 | FERRITE BEAD INDUCTOR (R90: US, CND) | |
| FB505 | 1-216-864-11 | METAL CHIP 0 5% 1/16W | |
| | | | (EXCEPT R90: US, CND) |
| FB505 | 1-500-329-21 | FERRITE BEAD INDUCTOR (R90: US, CND) | |
| FB601 | 1-500-329-21 | FERRITE BEAD INDUCTOR | |
| | | < IC > | |
| IC301 | 8-759-641-92 | IC AK4517BVQ-L | |
| IC302 | 8-759-572-38 | IC NJM2140R | |
| IC303 | 8-759-641-90 | IC OPA2340EA | |
| IC304 | 8-759-559-91 | IC RN5RZ25AA-TR | |
| IC305 | 8-759-559-91 | IC RN5RZ25AA-TR | |
| IC501 | 8-759-661-14 | IC SN761056ADBT | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| @ IC502 | 8-752-397-66 | IC CXD2660GA | |
| IC504 | 8-759-647-75 | IC TC7W66FK (TE85R) | |
| IC505 | 8-759-647-75 | IC TC7W66FK (TE85R) | |
| IC601 | 8-759-642-14 | IC MPC17A56FTA | |
| IC602 | 8-759-642-58 | IC MPC17A17XDTBR2 | |
| IC603 | 8-759-642-59 | IC MPC18A20MTAEL | |
| IC604 | 8-759-358-40 | IC TLC372CPWR | |
| IC605 | 8-759-586-58 | IC XC6367B103MR | |
| @ IC801 | 8-752-914-73 | IC CXR701080-013GA | |
| IC802 | 8-759-593-47 | IC AK6417AM-E2 | |
| IC803 | 8-759-641-93 | IC XC6383C301MR | |
| IC804 | 8-759-641-91 | IC RV5C348A-E2 | |
| IC901 | 8-759-642-13 | IC MPC18A31FTA | |
| IC902 | 8-759-652-23 | IC RN5RG25AA-TR | |
| | | < JACK > | |
| J301 | 1-793-619-21 | JACK (LINE IN (OPTICAL)) | |
| J303 | 1-793-620-21 | JACK (MIC (PLIG IN POWER) | |
| J304 | 1-793-509-11 | JACK (🎧/LINE OUT) | |
| J901 | 1-785-383-11 | JACK, DC (POLARITY UNIFIED TYPE) | |
| | | | (DC IN 3V) |
| | | < COIL > | |
| L301 | 1-469-535-21 | INDUCTOR 10uH | |
| L302 | 1-469-535-21 | INDUCTOR 10uH | |
| L303 | 1-469-535-21 | INDUCTOR 10uH | |
| L501 | 1-469-535-21 | INDUCTOR 10uH | |
| L502 | 1-469-535-21 | INDUCTOR 10uH | |
| L601 | 1-410-389-31 | INDUCTOR CHIP 47uH | |
| L602 | 1-469-422-21 | INDUCTOR 22uH | |
| L603 | 1-419-258-21 | COIL, CHOKE 68uH | |
| L604 | 1-410-389-31 | INDUCTOR CHIP 47uH | |
| L605 | 1-469-422-21 | INDUCTOR 22uH | |
| L606 | 1-414-407-41 | INDUCTOR 330uH | |
| L607 | 1-419-441-21 | INDUCTOR 4.7uH | |
| L801 | 1-469-535-21 | INDUCTOR 10uH | |
| L802 | 1-410-389-31 | INDUCTOR CHIP 47uH | |
| L901 | 1-414-400-41 | INDUCTOR 22uH | |
| L902 | 1-469-426-21 | INDUCTOR 100uH | |
| L903 | 1-469-367-21 | INDUCTOR 10uH | |
| L904 | 1-419-257-21 | COIL, CHOKE 22uH | |
| L905 | 1-419-407-21 | COIL, CHOKE 33uH | |
| | | < LINE FILTER > | |
| LF901 | 1-416-405-21 | FILTER, CHIP EMI (COMMON MODE) | |
| | | < TRANSISTOR > | |
| Q101 | 8-729-046-45 | FET SI2302DS-T1 | |
| Q102 | 8-729-050-32 | TRANSISTOR 2SC5585TL | |
| Q201 | 8-729-046-45 | FET SI2302DS-T1 | |
| Q202 | 8-729-050-32 | TRANSISTOR 2SC5585TL | |
| Q301 | 8-729-928-81 | TRANSISTOR DTC144EE-TL | |
| Q302 | 8-729-046-49 | FET FDV304P | |
| Q303 | 8-729-929-99 | TRANSISTOR UMB11-TN | |
| Q305 | 8-729-046-45 | FET SI2302DS-T1 | |
| Q306 | 8-729-047-48 | TRANSISTOR UMD12N-TR | |
| Q307 | 8-729-047-48 | TRANSISTOR UMD12N-TR | |
| Q308 | 8-729-047-48 | TRANSISTOR UMD12N-TR | |

@ Replacement of CXD2660GA (IC502) and CXR701080-013GA (IC801) used in this set require a special tool. Therefore, they cannot be replaced.

## MAIN

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q309 | 8-729-928-81 | TRANSISTOR DTC144EE-TL | |
| Q501 | 8-729-928-81 | TRANSISTOR DTC144EE-TL | |
| Q601 | 8-729-046-43 | FET HAT2051T-EL | |
| Q602 | 8-729-046-42 | FET HAT2050T-EL | |
| Q603 | 8-729-046-45 | FET SI2302DS-T1 | |
| Q604 | 8-729-047-48 | TRANSISTOR UMD12N-TR | |
| Q605 | 8-729-928-27 | TRANSISTOR DTA144EE-TL | |
| Q607 | 8-729-046-45 | FET SI2302DS-T1 | |
| Q801 | 8-729-029-14 | TRANSISTOR DTC144EUA-T106 | |
| Q802 | 8-729-029-14 | TRANSISTOR DTC144EUA-T106 | |
| Q803 | 8-729-905-35 | TRANSISTOR 2SC4081T106R | |
| Q804 | 8-729-905-35 | TRANSISTOR 2SC4081T106R | |
| Q805 | 8-729-905-35 | TRANSISTOR 2SC4081T106R | |
| Q806 | 8-729-905-35 | TRANSISTOR 2SC4081T106R | |
| Q807 | 8-729-029-14 | TRANSISTOR DTC144EUA-T106 | |
| Q809 | 8-729-230-60 | TRANSISTOR 2SA1586YG-TE85L | |
| Q901 | 8-729-046-44 | TRANSISTOR ZDT6718TA | |
| Q902 | 8-729-046-45 | FET SI2302DS-T1 | |
| Q904 | 8-729-043-46 | FET MMBF2201NT1 | |
| Q905 | 8-729-928-27 | TRANSISTOR DTA144EE-TL | |
| Q906 | 8-729-928-81 | TRANSISTOR DTC144EE-TL | |
| Q1001 | 8-729-922-10 | TRANSISTOR 2SA1577-T106-QR | |

< RESISTOR >

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R102 | 1-208-715-11 | METAL CHIP | 22K | 0.5% | 1/16W |
| R103 | 1-208-691-11 | METAL CHIP | 2.2K | 0.5% | 1/16W |
| R104 | 1-208-683-11 | METAL CHIP | 1K | 0.5% | 1/16W |
| R105 | 1-208-687-11 | METAL CHIP | 1.5K | 0.5% | 1/16W |
| R107 | 1-218-961-11 | RES, CHIP | 4.7K | 5% | 1/16W |
| R108 | 1-218-953-11 | RES, CHIP | 1K | 5% | 1/16W |
| R109 | 1-216-793-11 | RES, CHIP | 4.7 | 5% | 1/16W (EXCEPT R90: FR/R91: FR) |
| R109 | 1-216-801-11 | RES, CHIP | 22 | 5% | 1/16W (R90: FR/R91: FR) |
| R111 | 1-208-931-11 | METAL CHIP | 68K | 0.5% | 1/16W |
| R112 | 1-208-927-11 | METAL CHIP | 47K | 0.5% | 1/16W |
| R113 | 1-208-927-11 | METAL CHIP | 47K | 0.5% | 1/16W |
| R114 | 1-208-927-11 | METAL CHIP | 47K | 0.5% | 1/16W |
| R115 | 1-208-683-11 | METAL CHIP | 1K | 0.5% | 1/16W |
| R116 | 1-218-945-11 | METAL CHIP | 220 | 0.5% | 1/16W |
| R117 | 1-208-719-11 | METAL CHIP | 33K | 0.5% | 1/16W |
| R118 | 1-208-703-11 | METAL CHIP | 6.8K | 0.5% | 1/16W |
| R119 | 1-218-985-11 | METAL CHIP | 470K | 0.5% | 1/16W |
| R120 | 1-218-849-11 | METAL CHIP | 3.3K | 0.5% | 1/16W |
| R122 | 1-218-953-11 | RES, CHIP | 1K | 5% | 1/16W |
| R202 | 1-208-715-11 | METAL CHIP | 22K | 0.5% | 1/16W |
| R203 | 1-208-691-11 | METAL CHIP | 2.2K | 0.5% | 1/16W |
| R204 | 1-208-683-11 | METAL CHIP | 1K | 0.5% | 1/16W |
| R205 | 1-208-687-11 | METAL CHIP | 1.5K | 0.5% | 1/16W |
| R207 | 1-218-961-11 | RES, CHIP | 4.7K | 5% | 1/16W |
| R208 | 1-218-953-11 | RES, CHIP | 1K | 5% | 1/16W |
| R209 | 1-216-793-11 | RES, CHIP | 4.7 | 5% | 1/16W (EXCEPT R90: FR/R91: FR) |
| R209 | 1-216-801-11 | RES, CHIP | 22 | 5% | 1/16W (R90: FR/R91: FR) |
| R211 | 1-208-931-11 | METAL CHIP | 68K | 0.5% | 1/16W |
| R212 | 1-208-927-11 | METAL CHIP | 47K | 0.5% | 1/16W |
| R213 | 1-208-927-11 | METAL CHIP | 47K | 0.5% | 1/16W |
| R214 | 1-208-927-11 | METAL CHIP | 47K | 0.5% | 1/16W |
| R215 | 1-208-683-11 | METAL CHIP | 1K | 0.5% | 1/16W |
| R216 | 1-218-945-11 | METAL CHIP | 220 | 0.5% | 1/16W |
| R217 | 1-208-719-11 | METAL CHIP | 33K | 0.5% | 1/16W |
| R218 | 1-208-703-11 | METAL CHIP | 6.8K | 0.5% | 1/16W |
| R219 | 1-218-985-11 | METAL CHIP | 470K | 0.5% | 1/16W |
| R220 | 1-218-849-11 | METAL CHIP | 3.3K | 0.5% | 1/16W |
| R222 | 1-218-953-11 | RES, CHIP | 1K | 5% | 1/16W |
| R301 | 1-218-985-11 | RES, CHIP | 470K | 5% | 1/16W |
| R302 | 1-218-953-11 | RES, CHIP | 1K | 5% | 1/16W |
| R303 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R304 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R305 | 1-218-941-11 | RES, CHIP | 100 | 5% | 1/16W |
| R307 | 1-218-941-11 | RES, CHIP | 100 | 5% | 1/16W |
| R309 | 1-218-941-11 | RES, CHIP | 100 | 5% | 1/16W |
| R317 | 1-218-941-11 | RES, CHIP | 100 | 5% | 1/16W |
| R318 | 1-218-941-11 | RES, CHIP | 100 | 5% | 1/16W |
| R319 | 1-218-941-11 | RES, CHIP | 100 | 5% | 1/16W |
| R320 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R322 | 1-218-989-11 | RES, CHIP | 1M | 5% | 1/16W |
| R323 | 1-218-973-11 | RES, CHIP | 47K | 5% | 1/16W |
| R324 | 1-218-971-11 | RES, CHIP | 33K | 5% | 1/16W |
| R502 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R503 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R505 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R506 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R507 | 1-218-971-11 | RES, CHIP | 33K | 5% | 1/16W |
| R508 | 1-216-809-11 | RES, CHIP | 100 | 5% | 1/16W (EXCEPT R90: US,CND, HK, JEW/ R91: HK, JEW) |
| R508 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W (R90: HK, JEW/R91: HK, JEW) |
| R508 | 1-218-823-11 | METAL CHIP | 100 | 0.5% | 1/16W (R90: US, CND) |
| R509 | 1-216-809-11 | RES, CHIP | 100 | 5% | 1/16W (EXCEPT R90: US,CND, HK, JEW/ R91: HK, JEW) |
| R509 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W (R90: HK, JEW/R91: HK, JEW) |
| R509 | 1-218-839-11 | METAL CHIP | 470 | 0.5% | 1/16W (R90: US, CND) |
| R510 | 1-216-809-11 | RES, CHIP | 100 | 5% | 1/16W (EXCEPT R90: US,CND, HK, JEW/ R91: HK, JEW) |
| R510 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W (R90: HK, JEW/R91: HK, JEW) |
| R510 | 1-218-831-11 | METAL CHIP | 220 | 0.5% | 1/16W (R90: US, CND) |
| R517 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R518 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W |
| R519 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R520 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R522 | 1-216-803-11 | METAL CHIP | 33 | 5% | 1/16W |
| R524 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R525 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R526 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R527 | 1-216-811-11 | METAL CHIP | 150 | 5% | 1/16W |
| R528 | 1-216-855-11 | METAL CHIP | 680K | 5% | 1/16W |
| R529 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W |
| R530 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R535 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R536 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R537 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R602 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R604 | 1-218-891-11 | METAL CHIP | 68K | 0.5% | 1/16W |
| R605 | 1-218-891-11 | METAL CHIP | 68K | 0.5% | 1/16W |
| R606 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R607 | 1-218-871-11 | METAL CHIP | 10K | 0.5% | 1/16W |
| R608 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R609 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R610 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R611 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R612 | 1-216-843-11 | METAL CHIP | 68K | 5% | 1/16W |
| R613 | 1-218-871-11 | METAL CHIP | 10K | 0.5% | 1/16W |
| R615 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R616 | 1-219-724-11 | METAL CHIP | 1 | 1% | 1/4W |
| R617 | 1-216-855-11 | METAL CHIP | 680K | 5% | 1/16W |
| R618 | 1-216-855-11 | METAL CHIP | 680K | 5% | 1/16W |
| R619 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R620 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R621 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R636 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R801 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R802 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W |
| R803 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R804 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R805 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| | | | | | (EXCEPT R90 : US, CND) |
| R806 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R807 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R808 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R809 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R810 | 1-218-977-11 | RES, CHIP | 100K | 5% | 1/16W |
| R811 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R812 | 1-218-903-11 | METAL CHIP | 220K | 0.5% | 1/16W |
| R813 | 1-218-903-11 | METAL CHIP | 220K | 0.5% | 1/16W |
| R814 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W |
| R815 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R816 | 1-218-989-11 | METAL CHIP | 1M | 0.5% | 1/16W |
| R817 | 1-216-851-11 | METAL CHIP | 330K | 5% | 1/16W |
| R818 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R819 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R820 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R821 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R822 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R823 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R824 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R825 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R826 | 1-216-821-11 | METAL CHIP | 1K | 5% | 1/16W |
| R827 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R828 | 1-216-841-11 | METAL CHIP | 47K | 5% | 1/16W |
| R829 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R830 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R831 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R833 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R834 | 1-218-887-11 | METAL CHIP | 47K | 0.5% | 1/16W |
| R835 | 1-218-887-11 | METAL CHIP | 47K | 0.5% | 1/16W |
| R838 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R840 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| | | | | | (EXCEPT R90: US, CND) |
| R901 | 1-219-724-11 | METAL CHIP | 1 | 1% | 1/4W |
| R902 | 1-242-996-91 | METAL CHIP | 0.68 | 1% | 1/4W |
| R903 | 1-216-813-11 | METAL CHIP | 220 | 5% | 1/16W |
| R904 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R905 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R906 | 1-216-817-11 | METAL CHIP | 470 | 5% | 1/16W |
| R907 | 1-216-849-11 | METAL CHIP | 220K | 5% | 1/16W |
| R908 | 1-216-845-11 | METAL CHIP | 100K | 5% | 1/16W |
| R909 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R910 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R911 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R912 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R913 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R914 | 1-218-899-11 | RES, CHIP | 150K | 0.5% | 1/16W |
| R915 | 1-218-887-11 | RES, CHIP | 47K | 0.5% | 1/16W |
| R916 | 1-208-931-11 | RES, CHIP | 68K | 0.5% | 1/16W |
| R918 | 1-216-837-11 | METAL CHIP | 22K | 5% | 1/16W |
| R919 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R921 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R922 | 1-216-797-11 | METAL CHIP | 10 | 5% | 1/16W |
| R923 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R924 | 1-216-829-11 | METAL CHIP | 4.7K | 5% | 1/16W |
| R927 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W |
| R928 | 1-218-871-11 | METAL CHIP | 10K | 0.5% | 1/16W |
| R929 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R930 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R931 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R932 | 1-216-857-11 | METAL CHIP | 1M | 5% | 1/16W |
| R934 | 1-216-835-11 | METAL CHIP | 15K | 5% | 1/16W |
| R935 | 1-216-864-11 | METAL CHIP | 0 | 5% | 1/16W |
| R936 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R937 | 1-216-827-11 | METAL CHIP | 3.3K | 5% | 1/16W |
| R938 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R939 | 1-216-847-11 | METAL CHIP | 150K | 5% | 1/16W |
| R940 | 1-216-833-11 | RES, CHIP | 10K | 5% | 1/16W |
| R941 | 1-208-927-11 | RES, CHIP | 47K | 0.5% | 1/16W |
| R1001 | 1-218-855-11 | METAL CHIP | 2.2K | 0.5% | 1/16W |
| R1002 | 1-218-855-11 | METAL CHIP | 2.2K | 0.5% | 1/16W |
| R1003 | 1-218-855-11 | METAL CHIP | 2.2K | 0.5% | 1/16W |
| R1004 | 1-216-853-11 | METAL CHIP | 470K | 5% | 1/16W |
| R1005 | 1-219-724-11 | METAL CHIP | 1 | 1% | 1/4W |
| R1006 | 1-218-977-11 | RES, CHIP | 100K | 5% | 1/16W |
| R1010 | 1-218-867-11 | METAL CHIP | 6.8K | 0.5% | 1/16W |

< COMPOSITION CIRCUIT BLOCK >

| | | |
|---|---|---|
| RB301 | 1-233-971-11 | RES, NETWORK (CHIP TYPE) 47K |
| RB302 | 1-233-961-11 | RES, NETWORK (CHIP TYPE) 1K |
| RB601 | 1-233-965-11 | RES, NETWORK (CHIP TYPE) 4.7K |
| RB602 | 1-233-979-11 | RES, NETWORK (CHIP TYPE) 1M |
| RB603 | 1-233-965-11 | RES, NETWORK (CHIP TYPE) 4.7K |

< SWITCH >

| | | |
|---|---|---|
| S801 | 1-762-805-21 | SWITCH, PUSH (1KEY) (OPEN/CLOSE DETECT) |
| S802 | 1-762-947-12 | SWITCH, PUSH (1KEY) (OPEN ➞) |
| S803 | 1-771-248-11 | SWITCH, TACTILE (T MARK) |

## MAIN

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| S804 | 1-771-770-21 | SWITCH, SLIDE (HOLD) | |
| S806 | 1-771-860-21 | SWITCH, PUSH (PROTECT DETECT) | |
| S807 | 1-771-770-21 | SWITCH, SLIDE (SYNCHRO REC) | |
| S901 | 1-771-806-21 | SWITCH, PUSH (1KEY) (BATTERY IN DETECT) | |
| | | < THERMISTOR > | |
| TH901 | 1-803-795-21 | THERMISTOR, POSITIVE | |
| | | < VIBRATOR > | |
| X501 | 1-781-574-21 | VIBRATOR, CRYSTAL (22.5792MHz) | |
| X801 | 1-781-575-21 | VIBRATOR, CERAMIC (19.9344MHz) | |
| X802 | 1-781-525-21 | VIBRATOR, CRYSTAL (32.768kHz) | |
| ********** | | | |
| | | MISCELLANEOUS | |
| | | ********** | |
| 6 | 1-756-028-11 | BATTERY | |
| 7 | 1-803-759-11 | LCD MODULE | |
| 57 | 1-756-028-11 | BATTERY | |
| 58 | 1-803-759-11 | LCD MODULE | |
| 151 | 1-675-466-11 | MOTOR FLEXIBLE BOARD | |
| ⚠168 | X-4952-386-1 | SERVICE ASSY, OP | |
| M601 | 8-835-666-01 | MOTOR, DC SSM-01C14A (SPINDLE) (WITH TURN TABLE) | |
| M602 | 1-763-399-11 | MOTOR, DC (SLED) (WITH GEAR) | |
| M603 | 1-763-400-11 | MOTOR, DC (OVER WRITE HEAD UP/DOWN) | |
| ********** | | | |
| | | ACCESSORIES & PACKING MATERIALS | |
| | | ********** | |
| ⚠ | 1-418-028-11 | ADAPTOR, AC (AC-MZR55) (R90: E, JEW/R91: JEW) | |
| ⚠ | 1-418-049-11 | ADAPTOR, AC (AC-MZR55) (R90: UK, HK/R91: UK, HK) | |
| ⚠ | 1-418-275-11 | ADAPTOR, AC (AC-MZR55) (R90: US, CND) | |
| ⚠ | 1-418-276-11 | ADAPTOR, AC (AC-MZR55) (R90: AEP, FR/R91: AEP, FR) | |
| ⚠ | 1-418-277-11 | ADAPTOR, AC (AC-MZR55) (R90: AUS) | |
| | 1-418-493-11 | REMOTECONTROL UNIT (RM-MZ2S) (BLACK) (R90: US, HK, CH, JEW) | |
| | 1-418-493-51 | REMOTECONTROL UNIT (RM-MZ2S) (SILVER) (EXCEPT R90: US/R91) | |
| | 1-418-493-61 | REMOTECONTROL UNIT (RM-MZ2S) (CLEAR) (R91) | |
| ⚠ | 1-418-784-11 | ADAPTOR (AC-MZR70), AC (R90: CH) | |
| ⚠ | 1-569-007-11 | ADAPTOR, CONVERSION 2P (R90: CH, JEW/R91: JEW) | |
| | 1-756-023-11 | CASE, BATTERY (for SIZE R6 (AA) BATTERY) | |
| | 1-756-036-11 | BATTERY, NICKEL HYDROGEN (NH-14WM) | |
| | 1-779-504-11 | CONNECTOR, OPTICAL (EXCEPT R90: HK CH, JEW/R91: HK, JEW) | |
| | 1-779-504-51 | CONNECTOR, OPTICAL (R90: HK, CH, JEW/R91: HK, JEW) | |
| | 3-043-060-01 | CASE, CHARGE (C/D) | |
| | 3-045-575-01 | CASE, CARRYING | |
| | 3-867-571-11 | MANUAL, INSTRUCTION (ENGLISH, SPANISH, PORTUGUESE, SWEDISH, FINNISH, RUSSIAN) (R90: AEP, UK, E, HK, JEW/R91: AEP, UK, HK, JEW) | |
| | 3-867-571-21 | MANUAL, INSTRUCTION (ENGLISH) (R90: US, AUS, CH) | |
| | 3-867-571-31 | MANUAL, INSTRUCTION (ENGLISH, FRENCH, GERMAN, DUTCH, ITALIAN) (R90: CND, AEP, FR/R91: AEP, FR) | |
| | 3-867-571-41 | MANUAL, INSTRUCTION (JAPANESE, CHINESE, KOREAN) (R90: E, HK, JEW/R91: HK, JEW) | |
| | 3-867-571-51 | MANUAL, INSTRUCTION (CHINESE) (R90: CH) | |
| | 8-953-278-90 | HEADPHONE MDR-A34SP (R90: US) | |
| | 8-953-304-90 | RECEIVER MDR-E805SP (EXCEPT R90: US) | |

| | |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié. |



2000B0586-1
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Published by General Engineering Dept.